

THE IRON AGE

THURSDAY, JUNE 27, 1889.

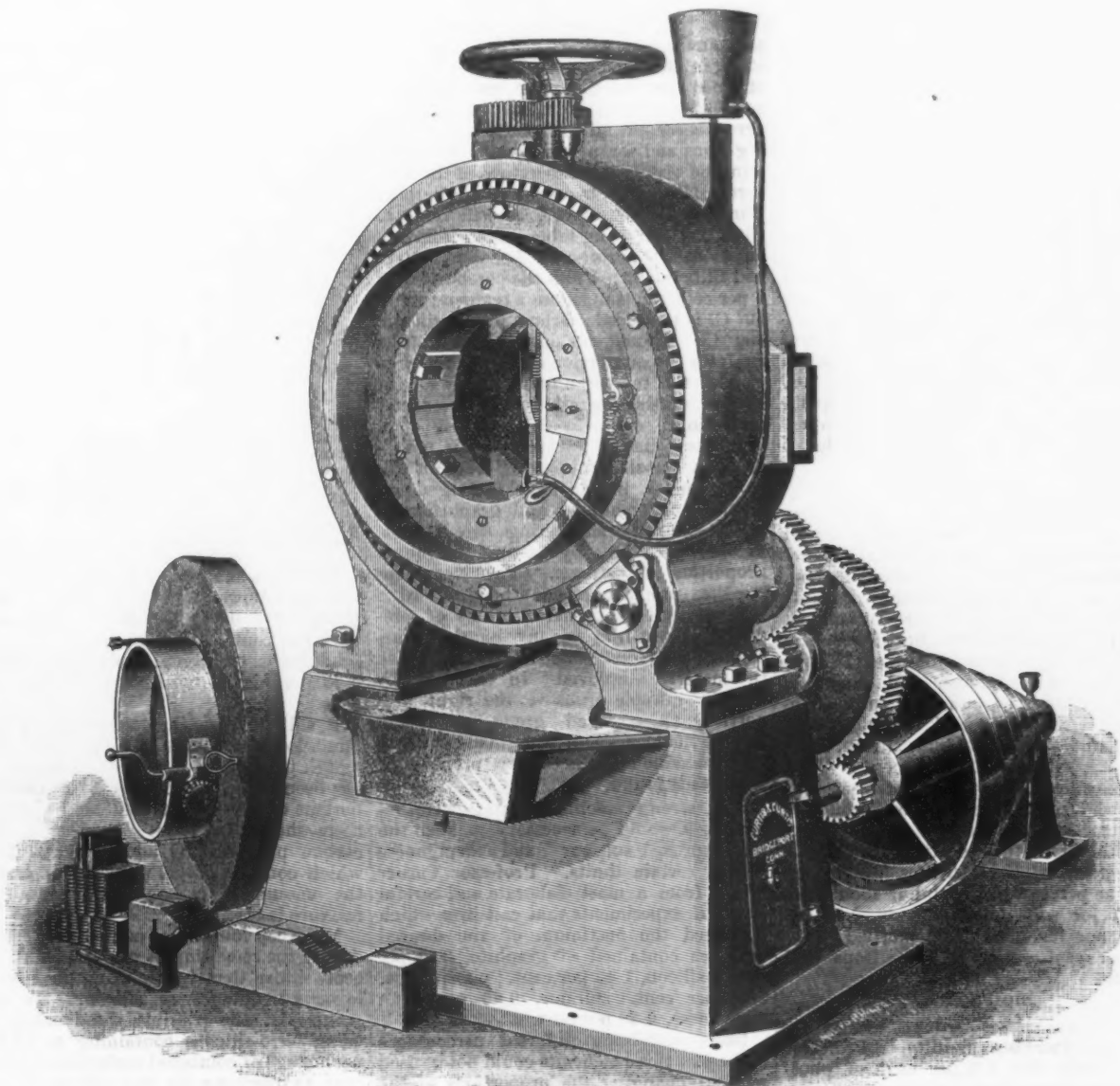
Pipe-Cutting and Threading Machine.

A new pipe-cutting and threading machine, of which we present an engraving, has just been placed on the market by Curtis & Curtis, of Bridgeport, Conn. It is arranged to cut off and thread all sizes of wrought-iron pipe, from 2½ to 12 inches inclusive—a very unusual range. On ac-

In operating the machine the pipe is placed through the self-centering vise attached to the back of the shell, with the end against the back of the dies, and clamped securely by turning the hand-wheel shown on the top of the machine. The dies are all opening and adjustable to any variation of the fitting by means of cams behind the dies on an annular ring, and they are set for the size of pipe to be

cheaper than any other 12-inch power pipe machine in the market. The floor-space is 47 x 65 inches and the shipping weight 5800 pounds.

The example of the Cumberland Valley Railroad in using a car fitted with a dynamo and the necessary apparatus for electric lighting seems likely to be followed



NEW PIPE-CUTTING AND THREADING MACHINE, BUILT BY CURTIS & CURTIS.

count of the small amount of floor-space required long length of pipe can be handled in a much smaller room than is usually required. The general principle is the same as in the smaller sizes of pipe-machines for hand or power made by this firm. The die-carrying gear is supported in a casing with the pinion imbedded in its side. On the back of the gear is placed a lead-screw of the same number of threads to the inch as the pipe to be cut, which engages with the brass lead blocks shown on the side of the shell, and which work out or in by excentrics. Thus as the gear revolves in the shell it is drawn into the shell by the lead-screw and the dies are brought on to the pipe.

cut by simply revolving the ring to the graduation. The difficulties attending so great a range are overcome by using two die gearing rings which fit into the large gear. The larger one is shown in the machine and contains six dies for threading all sizes, from 7 to 12 inch inclusive. The smaller fixture is shown by the side of the machine and contains four dies for threading all sizes, from 2½ to 6 inches inclusive. A change from 2½ to 12 inch pipe is made in a few moments by changing the fixture and the jaw steels. The advantages claimed for this machine are that it has the largest range, requires less floor-room, takes less power to run it, is more simple in construction and is far

in the near future by other roads throughout the country. The car in question demonstrated its great usefulness recently in the work of repairing tracks and bridges. It was used by the Pennsylvania Railroad in building the temporary bridge at Montgomery and at other points along the line. It is 33 feet long, 9 feet wide and 13½ feet from the rails to the top of the roof. The boiler and engine are at one end and the dynamos at the other. The lamps and tools for erecting the line are carried under the car. The boiler is 40 horse-power and the engine is a 35 horse-power vertical automatic. The dynamos are of 25 and 15 arc-light capacity respectively, each lamp being of 2000 candle-power.

Use of Softeners in Foundry Practice.

(Concluded from page 916, June 20.)

SILICON.

Silicon is a softener of cast-iron. It promotes the production of graphitic carbon by replacing the carbon combined with the iron. By the proper use of silicon any proportion of combined carbon can be obtained that is required by the founder. It increases the fluidity of cast-iron. It prevents shrinkage by lessening the amount of combined carbon. Silicon prevents the formation of chilled castings in the same manner, it being difficult to get iron to chill deeply with silicon as high as 1.25 per cent.

Mr. A. E. Hammer has stated that "the carbon in iron containing less than 1.25 per cent. of silicon is surprisingly sensitive to the least increase or diminution of the silicon, even 0.02 per cent. making, under favorable conditions, an appreciable difference." In certain cases, he says, "the cast-iron may not have contained quite enough silicon to coax or force the combined carbon into the graphitic or semi-graphitic state, and the addition, under these circumstances, of 0.077 per cent. or even less of silicon would be expected to have altered very decidedly all the mechanical and many of the chemical conditions of the iron." Professor Turner finds that the percentage of silicon should be, for the greatest tensile strength, 1.80 per cent.; for softness and working qualities, 2.50 per cent., when the percentage of lowest combined carbon is under 5 per cent.

SULPHUR.

Sulphur hardens the metal. It is very powerful in its action and acts in almost the contrary direction to silicon, as it promotes the formation of combined carbon, 1 part of sulphur neutralizing probably the effect of from 5 to 10 parts of silicon. Riley thinks that the "slight differences in the amount of sulphur would explain the differences in the number and quality of the iron, as the percentage of sulphur increases as the number of the pig passes from 1 to 6. No. 1 contains silicon, 2.619 per cent.; sulphur, 0.54 per cent.; No. 4 contains silicon, 2.234 per cent.; sulphur, 0.115 per cent.; white contains silicon, 0.27 per cent.; sulphur, 0.54 per cent.

It is observed that as silicon increases in pig-iron the sulphur decreases. In foundry irons the percentage of sulphur should not exceed for soft foundry irons 0.13 per cent., nor for hard and mottled irons 0.20 per cent., nor for white irons 0.25 per cent.

PHOSPHORUS.

Phosphorus causes hardness and brittleness and increases fluidity. Professor Turner finds that 0.3 per cent. of phosphorus is a good figure for strong castings.

MANGANESE.

Manganese tends to the formation of combined carbon in cast-iron and reduces the tensile strength. Manganiferous irons are brittle. As the manganese is increased the hardening properties are increased, since it acts in a contrary direction to silicon, and more powerfully in keeping the carbon in the combined state. M. Al. Pourcel, Terrenoire, states that silicon is neutralized by manganese when for each chemical equivalent of silicon there is a little more than an equivalent of manganese present. Silicon when neutralized by manganese does not diminish the hardening properties of the metal. M. Gautier found that the presence of manganese prevented mottled iron from becoming gray when scrap, burnt iron, ferro-silicon and No. 1 Scotch irons were melted together in a mixture.

Manganese is considered to make iron fluid, to take out the shrinkage of certain

irons, and to make clean castings. It protects the silicon during remelting from oxidation, and should therefore always be present to some extent, so that the iron by retaining its silicon may continue to be graphitic.

Professor Turner finds 0.58 per cent. manganese to be the best figure for strong castings. Dr. Dudley stated to me that as manganese hardens both foundry and car-wheel metal it increases the cost of boring and machining the castings; he therefore recommends that manganese be kept below 0.50 per cent. in foundry pig-iron.

MIXTURES OF IRONS.

In the cupola practice of the Bessemer steel process for a given grade of steel, the proportions of phosphorus, sulphur and manganese being prescribed and constant in the materials used, the mixtures of irons are based almost entirely upon calculations made from analyses of the percentages of silicon contained in the pig-irons and scrap employed. To maintain the required temperature in the converter silicon is necessary, it being the principal heat-producer, as will be seen from the following table, taken from calculations by Professors Ledebur, Favre and Silbermann: From the combustion of 1 per cent. of manganese a temperature of 69° C. is produced; carbon, 6° C.; silicon, 300° C. From calculations made from analyses the proportion of silicon required to give the temperature necessary for the success of the operation is very exactly maintained.

In the foundry the problem is not to attain a certain amount of heat in the molten metal, but to have the right proportions of combined and graphitic carbon in the resulting casting; this is done, as we have seen, by getting the proper proportion of silicon. The variations in the proportions of silicon afford a reliable and inexpensive means of producing a cast-iron of any required mechanical character which is possible with the material employed. In this way, by mixing suitable irons in the right proportions, a required grade of casting can be made more cheaply than by using irons in which the necessary proportions are already found.

If a strong machine casting were required, it would be necessary to keep the phosphorus, sulphur and manganese within certain limits. Professor Turner found from a most elaborate and careful series of experiments that cast-iron which possessed the maximum of the desired qualities contained of graphite, 2.59 per cent.; silicon, 1.42 per cent.; phosphorus, 0.39 per cent.; sulphur, 0.06 per cent.; manganese, 0.58 per cent.

Irons containing different percentages of the last three elements could not be used without changing the proportions of the other two and complicating the calculations necessary for making a mixture that would produce a strong casting. A strong casting could not be made if there was much increase in the amount of phosphorus, sulphur or manganese. Irons of the above percentages of phosphorus, sulphur and manganese would be most suitable for this purpose, but they could be of different grades, having different percentages of silicon, combined and graphitic carbon. Thus hard irons, mottled and white irons, and even steel scrap, all containing low percentages of silicon and high percentages of combined carbon, could be employed if an iron having a large amount of silicon were mixed with them in sufficient amount. This would bring the silicon to the proper proportion and would cause the combined carbon to be forced into the graphitic state, and the resulting casting would be soft. High-silicon irons which are used in this way are called "softeners."

HIGH-SILICON IRONS.

Mr. Keep gives the following analyses of high-silicon irons:

Ferro-Silicon.

	Foreign. Per cent.	Foreign. Per cent.	Foreign. Per cent.	American. Per cent.	American. Per cent.
Silicon.....	10.55	10.62	9.80	12.08	10.34
Combined carbon.....	1.84	...	0.69	0.06	0.07
Graphitic carbon.....	0.52	...	1.12	1.52	1.92
Manganese.....	3.80	2.32	1.95	0.76	0.52
Phosphorus.....	0.04	...	0.21	0.48	0.45
Sulphur.....	0.03	...	0.04	Trace	Trace
Total carbon.....	2.36	...	1.81	1.58	1.99

Average total carbon, 1.93 per cent.

Softeners—American.

	Wells- ton. Per cent.	Wells- ton. Per cent.	Globe. Per cent.	Globe. Per cent.
Silicon.....	6.67	5.06	5.89	6.64
Combined carbon.....	...	...	0.30	...
Graphitic carbon.....	2.57	...	2.85	...
Manganese.....	...	...	1.00	...
Phosphorus.....	0.50	0.75	1.10	0.99
Sulphur.....	Trace	0.05	0.02	Trace

Mr. Meissner gives the following analyses of Scotch irons:

	Silicon.	Phosphorus.	Manganese.	Sulphur.	Graphite.	Combined Carbon.
Summerlee No. 1..	2.70	0.545	1.80	0.01	3.00	0.25
Summerlee No. 1..	2.47	0.790	2.51	0.015	...	...
Summerlee No. 1..	3.44	1.00	1.70	0.015	...	...
Summerlee No. 2..	2.70	0.81	2.90	0.020	2.00	0.80
Eglinton No. 1.....	2.15	0.618	2.80	0.025	3.76	0.21
Coltness No. 1.....	2.59	0.845	1.70	0.010	...	3.75(?)
Glenarnock No. 1..	3.03	1.20	2.85	...	...	...
Glenarnock No. 2..	4.00	0.90	3.40	0.01	1.78	0.90

I add the analysis of the Bellefonte soft irons as follows: Silicon, 3 to 6 per cent.; phosphorus, 0.345 per cent.; manganese, 0.53 per cent.; sulphur, 0.03 per cent.; graphite, 3 per cent.; combined carbon, 0.25 per cent.; total carbon, 3.25 per cent.

It will be seen that ferro-silicons contain a low percentage of total carbon and a high percentage of combined carbon. It has been stated that carbon is the most important constituent of cast-iron, and that there should be about 3.4 per cent. total carbon present. By adding ferro-silicon which contains only 2 per cent. of carbon the amount of carbon in the resulting mixture is lessened.

Mr. Keep found that more silicon is lost during the remelting of pig of over 10 per cent. silicon than in remelting pig-iron of lower percentages of silicon. He also points out the possible disadvantage of using ferro-silicons containing as high a percentage of combined carbon as 0.70 per cent. to overcome the bad effects of combined carbon in other irons. Professor Turner finds that the lowest percentages of combined carbon are met within iron containing from 4 to 7 per cent. of silicon, being from a trace to 2 per cent.

The Scotch irons generally contain much more phosphorus than is desired in irons to be employed in making the strongest castings. It is a mistake to mix with strong low-phosphorus irons an iron that would increase the amount of phosphorus for the sake of adding softening qualities, when softness can be produced by mixing irons of the same low phosphorus.

Bauermann states that the highly-graphitic Scotch pig-irons, while useless in themselves for producing castings, have a great use in bringing up lower qualities of metal to the proper degree of grayness in the cupola.

M. Gautier says that the high percentage of manganese in Scotch softeners makes them inferior to ferro-silicons; therefore,

he says, Scotch irons might be improved by keeping down the manganese to 0.50 per cent. and raising the silicon to 3 per cent.

Tensile strength is important in the best castings; manganese reduces the tensile strength and increases the capacity of iron for combining carbon with itself; therefore a reduction of manganese in Scotch irons will increase the strength of the metal and enable it to carry more scrap. He found that the presence of manganese prevented mottled iron from becoming gray when a mixture was made of scrap, burnt iron, ferro-silicon and No. 1 Scotch; hence, he says, if ferro-silicon had not been discovered a new variety of Scotch pig, with less manganese and more silicon, could easily be provided for, and would afford a new field to that renowned product; but he was afraid that ferro-silicon, which was the essence of the good qualities of Scotch pig without any of the bad ones, must come to the front in the future.

From the analyses of the Bellefonte softener it is seen that it contains all the

Portable Coal Elevators.

The accompanying illustration is that of a portable coal elevator constructed according to the methods employed by the Clark-Howard Excavator and Conveyor Company in coal-handling machinery, and is now in daily use at the coal wharves of the Philadelphia and Reading Railroad Company at Port Richmond, Philadelphia. The machine has a lift of 30 feet, an adjustment of 16 feet and a capacity of 300 tons per hour. It is built on an ordinary flat gondola car, with a simple hoisting engine and boiler of about 15 horse-power attached, and consists of an arrangement of 40 buckets attached to an endless chain at stated intervals, which passes around a system of wheels. Each bucket holds about 250 pounds of coal. The entering edge of the bucket, where it passes into the coal pile, is fitted with prongs which project ahead, so that instead of crushing into the coal and breaking its way, it gently loosens the coal and scoops it up. The manner in

force of manual labor which is unreliable and expensive. The breakage is reduced to a minimum and is less than that caused by handling by hand. The theory employed in this machine is to handle a large amount of coal at a slow rate of speed, thereby gathering and depositing the coal so slowly and carefully that it becomes impossible to break it; and instead of flinging the coal out at a great height upon a pile beneath, the door of each bucket opens from the back and the coal slides gently out, the motion being that of drawing the bucket away from the coal. This machine has proved to the satisfaction of those in charge of the Philadelphia and Reading coal-yards that it handles coal cheaper, quicker and more securely than ever before. This machine is made by the Clark-Howard Excavator and Conveyor Company, of 135 Broadway, New York, and Third and Walnut streets, Philadelphia, Pa.

The Cooper Union.

The thirteenth annual report of the trustees of the Cooper Union for the Advancement of Science and Art, New York, has just been issued. It comprises a pamphlet of 63 pages. We extract the following interesting statement:

The trustees have heretofore made known to the public the necessities of the institution, and they can now only repeat that additions to the endowment fund will be most acceptable, and, indeed, are absolutely necessary, in order to meet the constantly increasing pressure for admission to the various privileges of the institution. The applications to the art school are more than a year in advance of the possibilities of admission. If the school were double in size it would promptly be filled by the applicants for admission. The other departments of the institution, especially the night classes, are crowded to their full capacity and require enlargement. The space exists in the building, but the funds are deficient for the necessary expenses. To bring the institution up to the full measure of its capacity an endowment of \$1,000,000 will not be too much. In the meantime the trustees will henceforth be compelled to keep the expenditures within the income which can be got from the rented portions of the institution and the annual interest of the endowment of \$300,000 provided by the heirs of Mr. Cooper. During the past year the number of pupils has been:

	Students.
In the woman's art school.....	310
In the phonography and type-writing class. 50	
In the telegraphy class.....	34

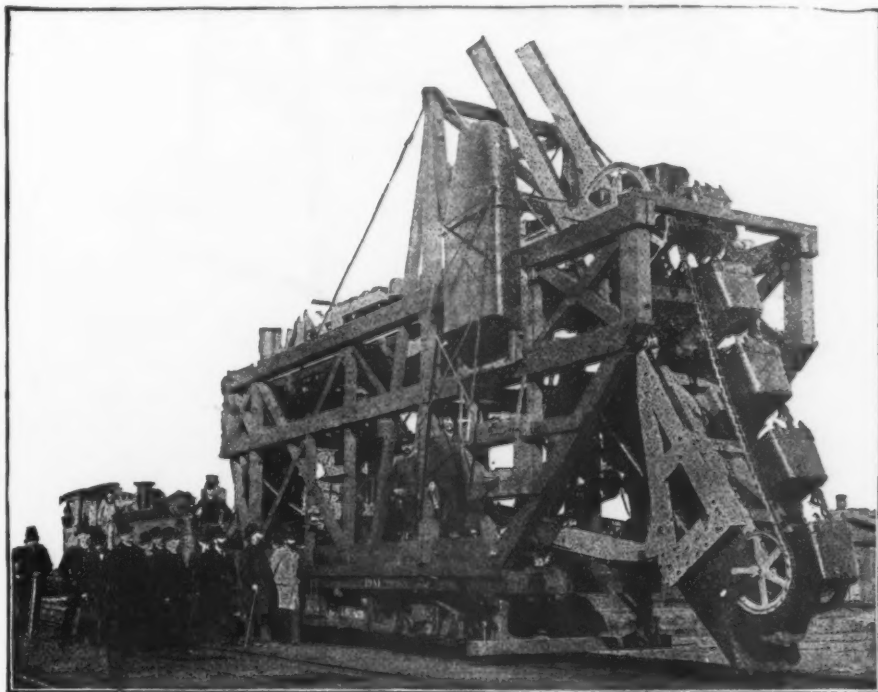
Total female day scholars.....394

In the night school of science.....	980
In the night school of art.....	2,147

Total male night scholars.....3,127

The average daily attendance at the reading-room amounts to 1500 readers. The free lectures on Saturday evening have attracted very large audiences, often exceeding the capacity of the great hall. These figures serve to give an idea of the magnitude of the educational work carried on by the Cooper Union.

We have received a copy of the proceedings of the first session of the National Convention of the Representatives of Commercial Bodies to formulate an equitable uniform bankrupt law, held pursuant to call of the Associated Wholesale Grocers of St. Louis, February 28 and March 1, 1889, at St. Louis. The proceedings are published in a broad-paged pamphlet of 100 pages. The last page of the cover contains a full list of the officers of the convention, headed by Jay L. Torrey, of St. Louis, president.



PORTABLE COAL ELEVATOR.

good qualities of both ferro-silicon and Scotch pig, without any of the bad ones of either. Silicious ores from the Barrens group of Centre County (the section from which the Bellefonte Furnace Company's ores come), containing as high as 40 per cent. of silica, have been shipped in large quantities to furnaces in Ohio making a specialty of softeners.

Desiring what many furnace men have expressed themselves in favor of, that iron should be bought and sold on analyses, I have undertaken to furnish the analysis of all shipments of iron made when asked for, and to furnish iron of the above proportions of phosphorus, sulphur and manganese, and of any percentage of silicon asked for below 6 per cent. I have even met the foundry men more than half way, undertaking to analyze their irons and scrap on hand, and to furnish an iron that would carry the amount of scrap and hard iron that they desire to use.

WALTER GRAHAM,
Chemist of the Bellefonte Furnace Company and Member of the American Institute of Mining Engineers and of the Verein Deutscher Eisenhüttenleute.
BELLEFONTE, PA., May 31, 1889.

which the machine performs its work is this: It is placed upon trestles over coal piled beneath, an engineer and two attendants being all the manual labor necessary to operate the machine. The boot with the chain of buckets is lowered into the hatch between the trestles. The endless chain begins to move, when the bucket nearest the coal enters gently and slowly into the mass, preceded by the prongs, which loosen and scoop it up. The chain revolving draws bucket after bucket through the coal at the slow speed of 75 feet per minute. The chain passes the buckets up the perpendicular to the top wheel, at which point a trip-wheel is also located, which strikes a latch in the back of the bucket, the door opens and the coal slides gently into a chute situated a little below the course taken by the buckets and thence on into cars drawn up on either side on the adjacent tracks. The bucket continues now empty until it reaches another wheel, where it is similarly closed and proceeds downward, to be refilled and emptied as before.

The advantages derived from handling coal in this manner are all primary and important. It does away with that large

The Puritan.

The Puritan, which is without doubt the grandest river steamboat in the world, has taken her place in the fleet of the Fall River Line and will, in the future, ply between New York and Fall River. Her most important dimensions are: Length over all, 420 feet; length on water-line, 404 feet; width, 52 feet; depth, 21½ feet; gross tonnage, 4650 tons. The steel hull is double and is divided into 59 water-tight compartments; the decks are also of steel, covered with wood. The masts are hollow and will serve as ventilators. The engine is of the compound vertical beam surface condensing type, and develops 7500 horsepower. The high-pressure cylinder is 75 inches in diameter and 9 feet stroke, and the low pressure is 110 inches diameter and 14 feet stroke. The shaft is 27 inches in diameter in the main bearing and 30 inches in the gunwale bearings. There are eight return tubular steel boilers, carrying a pressure of 110 pounds. The boilers have 850 square feet of grate surface and 26,000 square feet of heating surface. The fire-room is 78 x 12½ feet. The vessel is steered by steam, a two-cylinder engine being provided for this purpose. The extreme upper deck has a promenade entirely around it; this walk is over 600 feet long and 42 feet above the water. On the saloon deck is a second promenade entirely around the boat. The cabins are all extremely large and richly decorated and furnished. The main saloon is 128 x 28 feet and the dining-room 108½ x 30 feet. The steamer is lighted by electricity and every known precaution has been taken to guard against fire.

Universal Hand-Lathe.

The Brown & Sharpe Mfg. Company, of Providence, R. I., have just issued a pamphlet on the construction and use of the universal hand-lathe made by them. The pamphlet describes and illustrates

fastened to the bed by a clamp-screw, and can be easily shifted or taken from the bed; its spindle moves in a steel bushing and is operated by a hand-lever which has its fulcrum on an adjustable stud back of the spindle. This spindle may be clamped

to ¼ inch in diameter. The tapering portion of the hole is ground. A thread to receive a face-plate or lathe-chuck is cut on the front end of the spindle, and when not in use is protected by a guard-nut. The spindle-boxes are fitted into taper



UNIVERSAL HAND-LATHE.

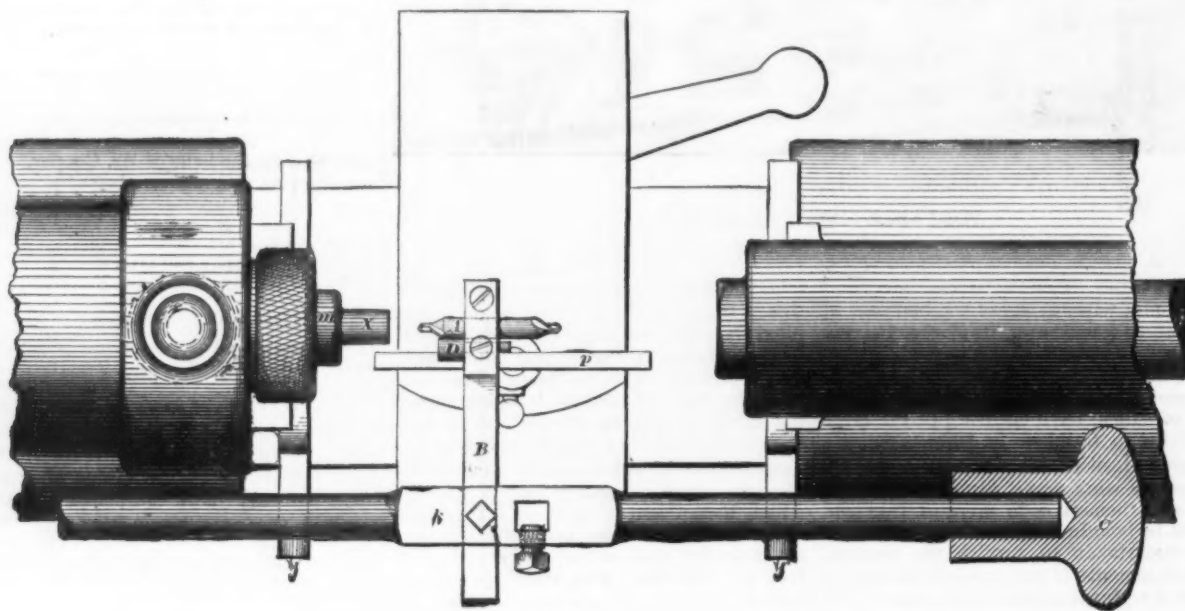


Fig. 3.—Method of Centering Bars and Shafts.

many new attachments designed for work not usually done on the hand-lathe.

As here shown, the lathe rests upon a table, but it is frequently used as a bench-lathe. The top of the bed is flat and is scraped to surface-plate, as are also the bearing surfaces of the foot-stock and the slide or other rests. The foot-stock is

in any position and has a movable stop, *r*, Fig. 1, which serves to limit the forward motion when brought against the adjustable stop-screw *s*. The head-stock, spindle and boxes are steel, hardened and fitted by grinding. The hole through the spindle is ¼ inch in diameter the greater part of its length and tapers at the front

holes in the head-stock and held in place by nuts. On one side they are cut open and, when adjusted, are drawn forward by nuts and practically closed from all sides. The alignment of the spindle is thus preserved. The spindle bearings are thoroughly protected from grit and dust and are lubricated from beneath. Shell-chuck

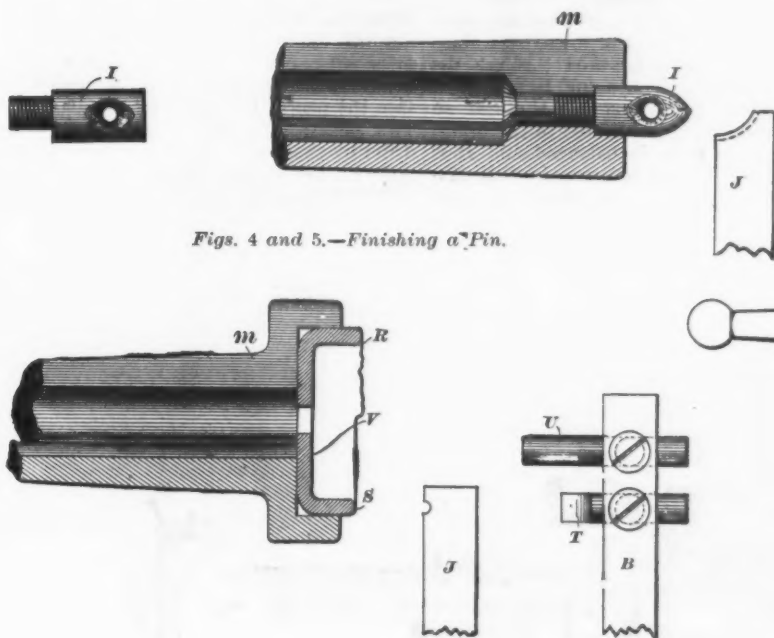
are provided for holding small work. These chucks are made in a great variety of forms, as required by the shape of the work. The tool-holder guides *j j* on the head and foot stock, Fig. 1, may be set in or out and enable the lathe to be used for turning small shafts, studs, screws, &c.,

cap, C, which is slipped over the end of the tool-holder. The pin D, in the drill-holder B, serves as a stop in connection with the end of the shaft, and determines the depth of the hole.

In finishing a pin, I, Fig. 4 and 5, a special chuck is used, which grips the

is removed by the tool T, and the edge S is rounded with a bead tool, J. The pin U is a stop to regulate the depth of the cap by coming in contact with the inside surface V. The tools and pin are held in the tool-holder shown in Fig. 3, the tools being at right angles to each other. These caps are also bitted and countersunk in the hand-lathe, and when riveted to a stem the burr is turned off with a hand-tool.

The ends of a great many odd-shaped pins are rounded as at M, Fig. 7. This cannot be done with the arrangement of tools before described on account of the projecting part; accordingly the tool is held in a collet, which is inserted in the foot-stock spindle. The work is held on



Figs. 4 and 5.—Finishing a Pin.

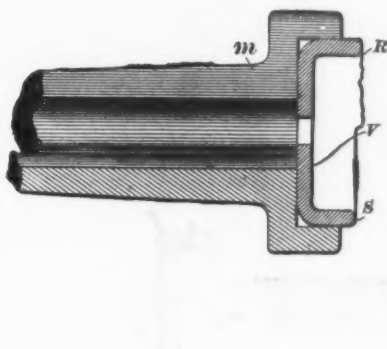


Fig. 6.—Finishing Small Caps.

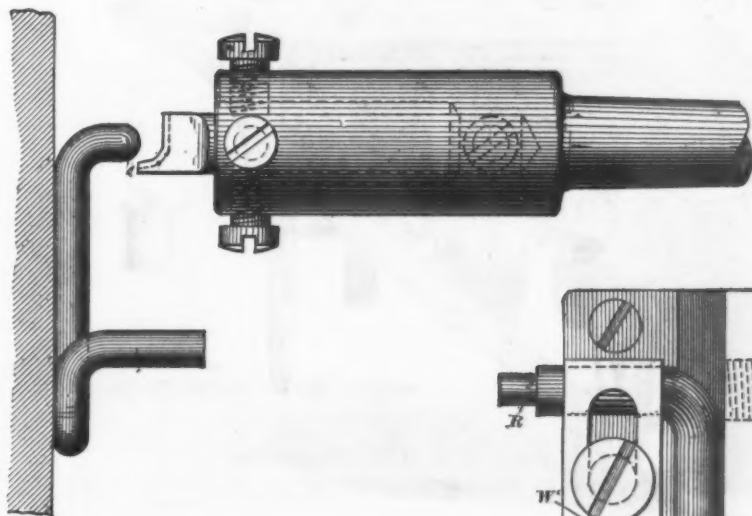


Fig. 7.—Rounding Ends.

either straight or taper. The lathe swings 9 inches over bed and receives 14 inches between centers. The bed is 36 inches long. The table or stand on which the bed rests is 12 x 40 inches, measured over all. Height of table from floor, 34½ inches; height of centers from floor, 44½ inches; floor-space, measured over extreme points of movement of lever on foot-stock, 25 x 53 inches. The weight of the lathe complete ready for shipment is about 500 pounds.

The tool-rest shown in plan in Fig. 2 can be clamped to the bed at any angle and can also be adjusted vertically.

Fig. 3 shows a method of centering needle-bars, foot-bars, shafts, &c. The drill A is fastened in the drill-holder B, which is secured in the tool-holder C. The tool-holder slides on the guides *j j*, and the outer end of the drill-holder slides upon the tool-rest *p*. The shaft X, to be centered, is held in a shell-chuck, *m*, while the drill is pressed against it by hand, the palm bearing on a wooden

body and closes about the thread of the pin just enough to steady and hold it in line. The pin could not be held by the thread alone without damage, and the body is too short to admit of its being held by that alone. To use an ordinary chuck for such work would be comparatively slow and costly.

A method of finishing small caps is shown by Fig. 6. These caps come to the hand-lathe from the punch press in the form shown at R. The superfluous stock

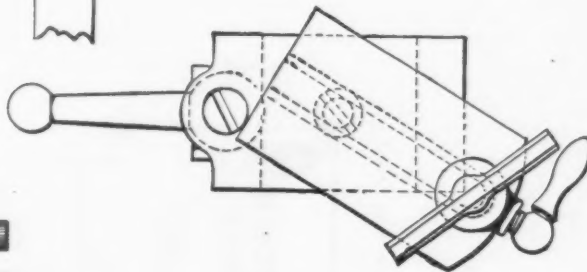


Fig. 2.—Tool-Rest.

a face-plate, and the end located centrally by a clamp and stop-pins. The length is regulated by adjusting the stop and stop-screw, which limit the forward movement of the foot-stock spindle. The four screws are used to adjust the tool when it is worn or ground. Sometimes it is more convenient that the tool should be held in the live spindle and the work secured to the dead spindle, as in turning the shoulders R and S, Fig. 8. The piece is held by the clamp W in a groove on a special fixture, U, and is moved to a hollow mill by the hand-lever.

C. P. Huntington, of American railway celebrity, has become interested in the Congo railway, 230 miles in length, to be built around the falls of the Congo River,

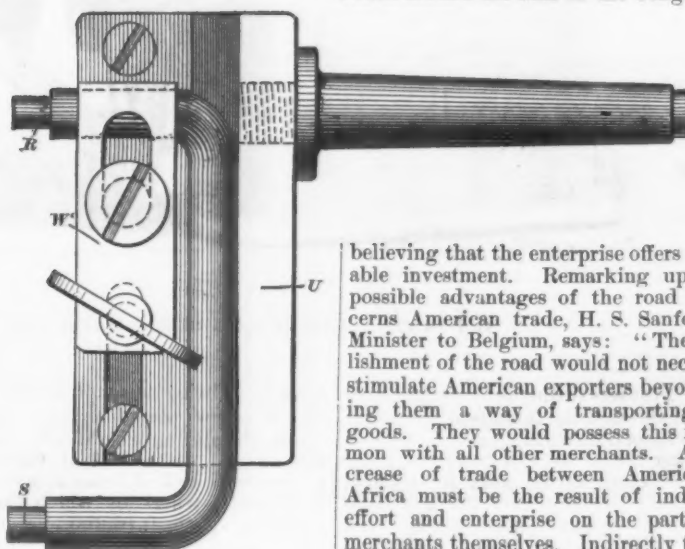


Fig. 8.—Rounding Ends.

believing that the enterprise offers a profitable investment. Remarking upon the possible advantages of the road as concerns American trade, H. S. Sanford, ex-Minister to Belgium, says: "The establishment of the road would not necessarily stimulate American exporters beyond giving them a way of transporting their goods. They would possess this in common with all other merchants. Any increase of trade between America and Africa must be the result of individual effort and enterprise on the part of the merchants themselves. Indirectly the fact that American capital was interested, were this the case, might direct the attention of Americans to the field and in this way increase the commerce of this country. It is quite within the range of probability that if the road were finished some of our manufacturers would endeavor to take advantage of it and try to find a market for their goods along the Upper Congo and its tributaries. Apart from this, however, I do not see why the road should not pay on the freights it would secure. The articles we get from Africa now are sufficiently valuable to stand heavy freight charges."

Automatic Testing-Machine.

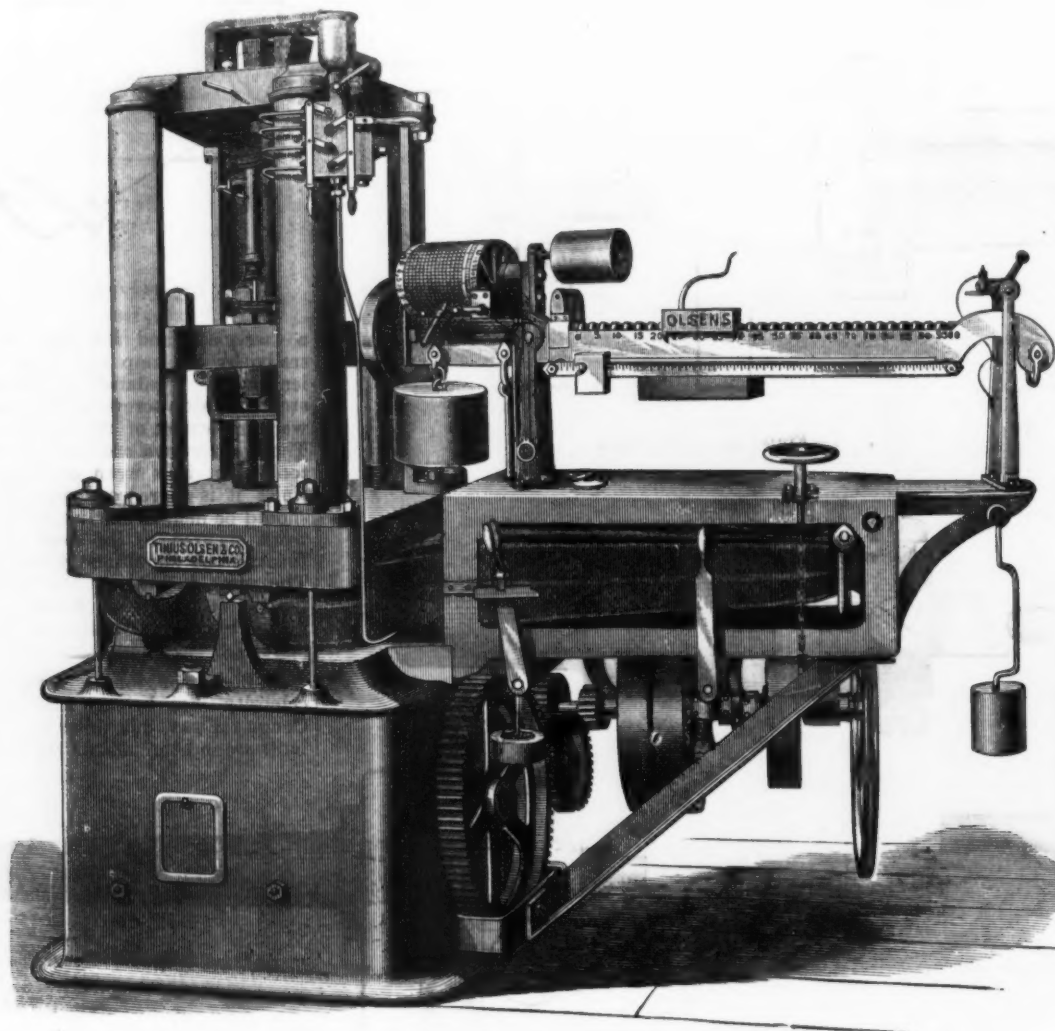
The illustrations represent the latest form of automatic testing-machines built by Tinius Olsen & Co., of Philadelphia, Pa. One end of the sample of material of which it is desired to ascertain the tensile strength is secured by proper tools to the extreme upper plate of the machine, while the other end is secured to the plate below, thereby exposing that part of the specimen between the plates on which the strain is exerted. The lower plate or cross-head is secured to four straining-screws which pass through holes at the carriers of the weighing platform of the machine, through openings in the levers and bed-plate, and enter the driving-nuts situated below the

portant on cast-iron and plate specimens of wrought-iron or steel.

The weighing apparatus consists of the main levers upon which the platform rests, three in number, and so constructed as to act as a single lever, and supporting the platform upon which rest the columns which carry the upper plate or cross-head. As one end of the specimen is secured in the upper cross-head any stress imparted to the specimen by the lower straining-head will be communicated through the columns and platform to the levers. The stress on the main lever is through an intermediate lever connected to the beam, where the amount is balanced and thus registered. The stresses are in this machine automatically balanced on the

after his calculations or measuring while the specimen is being pulled apart, thus saving much time. The wheel at the end of the screw besides operating the screw also serves as a dial vernier for reading the smaller fraction of the stresses.

The machine is also provided with means by which it graphically records the result of the test. In order to do this the distortion of the specimen under test must not only be observed but transferred to a piece of paper which is mounted on a drum on the beam, in front of which is seen the pencil for marking the diagram. The pencil is moved axially along the drum by the same screw that moves the poise on the beam, and thus this motion indicates the stress on the specimen. The



AUTOMATIC TESTING-MACHINE, MADE BY TINIUS OLSEN & CO.

latter. Feathers fitting into longitudinal slots cut through the threads of the screws prevent them from turning, and they therefore either rise or fall and carry the lower plate with them as the nuts are rotated. These nuts are operated through bevel gearing by outside spur gearing and counter-shaft, which is shown in the lower right of the cut. The counter-shaft is provided with double cone and friction pulleys, admitting of six downward or pulling speeds and two upward speeds.

For tensile tests the ends of the specimen are secured to the plates by steel wedges which enter rectangular openings cut through the centers of the plates. Interposed in the space between the wedges proper and the plate are spherical surface bearings by which the wedges are adjusted to the specimen, and the specimen is adjusted centrally and on a parallel line to the line of greatest stress, and a straight pull secured. This item is especially im-

portant on cast-iron and plate specimens of wrought-iron or steel. The weighing apparatus consists of the main levers upon which the platform rests, three in number, and so constructed as to act as a single lever, and supporting the platform upon which rest the columns which carry the upper plate or cross-head. As one end of the specimen is secured in the upper cross-head any stress imparted to the specimen by the lower straining-head will be communicated through the columns and platform to the levers. The stress on the main lever is through an intermediate lever connected to the beam, where the amount is balanced and thus registered. The stresses are in this machine automatically balanced on the

In order to make connection between the pinion and the wheel the pinion-shaft bearing is mounted on one end of a lever whose other end is controlled by an electromagnet. The circuit is broken and connected by the vibration of the beam. Thus the raising of the beam completes the circuit, when the magnet attracts the lever and throws the friction-pinion in contact with the wheel and the screw revolves. When the beam drops the reverse takes place. This arrangement simplifies the testing, as the attendant may look

rotary motion of the drum is reserved to show the distortion of the specimen. On the specimen are secured small heads a certain distance apart, say 6, 8 or 10 inches, the distance in which the distortion, or, in case of tensile tests, the elongation, is to be observed. Between the heads are placed small cylinders partly filled with water, a similar cylinder being placed on the beam in front of the drum. These cylinders are then connected through a collector and reservoir shown at the top of the illustration, and by the help of which the arrangement is controlled and operated. The drum carrying the paper can be connected directly with the cylinder in front of it, and when all is properly adjusted any expansion of the cylinders and their pistons on the specimen caused by its elongation will cause corresponding contraction of cylinder and piston in front of the drum, and this motion is transferred to the drum on which the line is drawn.

This line is drawn on properly-lined paper, so that the results of the test, tensile strength, limit of elasticity and elongation may be observed at a glance.

Verbatim Copy of Texas Trust Law.

We have received a copy of the act of the Texas Legislature which was adopted for the purpose of crushing out all trusts and combinations seeking to do business in that State. The act was approved by the Governor on March 30. It reads as follows:

[S. H. Bs. Nos. 9, 117, 136, 192 and 313.] An Act to define trusts, and to provide for penalties and punishment of corporations, persons, firms and associations of persons connected with them, and to promote free competition in the State of Texas.

Section 1. Be it enacted by the Legislature of the State of Texas: That a trust

or transportation at a fixed or graduated figure, or by which they shall in any manner establish or settle the price of any article or commodity or transportation between them or themselves and others to preclude a free and unrestricted competition among themselves or others in the sale or transportation of any such article or commodity, or by which they shall agree to pool, combine, or unite any interest they may have in connection with the sale or transportation of any such article or commodity that its price might in any manner be affected.

Sec. 2. That any corporation holding a charter under the laws of the State of Texas which shall violate any of the provisions of this act shall thereby forfeit its charter and franchise, and its corporate existence shall cease and determine.

Sec. 3. For a violation of any of the provisions of this act by any corporation mentioned herein it shall be the duty of

Sec. 6. Any violation of either or all the provisions of this act shall be and is hereby declared a conspiracy against trade, and any person who may be or may become engaged in any such conspiracy or take part therein, or aid or advise in its commission, or who shall, as principal, manager, director, agent, servant, or employee, or in any other capacity, knowingly carry out any of the stipulations, purposes, prices, rates, or orders thereunder or in pursuance thereof, shall be punished by fine not less than \$50 nor more than \$5000, and by imprisonment in the penitentiary not less than one nor more than ten years, or by either such fine or imprisonment. Each day during a violation of this provision shall constitute a separate offense.

Sec. 7. In any indictment for an offense named in this act it is sufficient to state the purposes or effects of the trust or combination, and that the accused was a member of, acted with or in pursuance of it, without giving its name or description, or how, when, or where it was created.

Sec. 8. In prosecutions under this act it shall be sufficient to prove that a trust or combination as defined herein exists, and that the defendant belonged to it or acted for or in connection with it, without proving all the members belonging to it, or proving or producing any article of agreement or any written instrument on which it may have been based, or that it was evidenced by any written instrument at all. The character of the trust or combination alleged may be established by proof of its general reputation as such.

Sec. 9. Persons out of the State may commit and be liable to indictment and conviction for committing any of the offenses enumerated in this act which do not in their commission necessarily require a personal presence in this State, the object being to reach and to punish all persons offending against its provisions whether within or without the State.

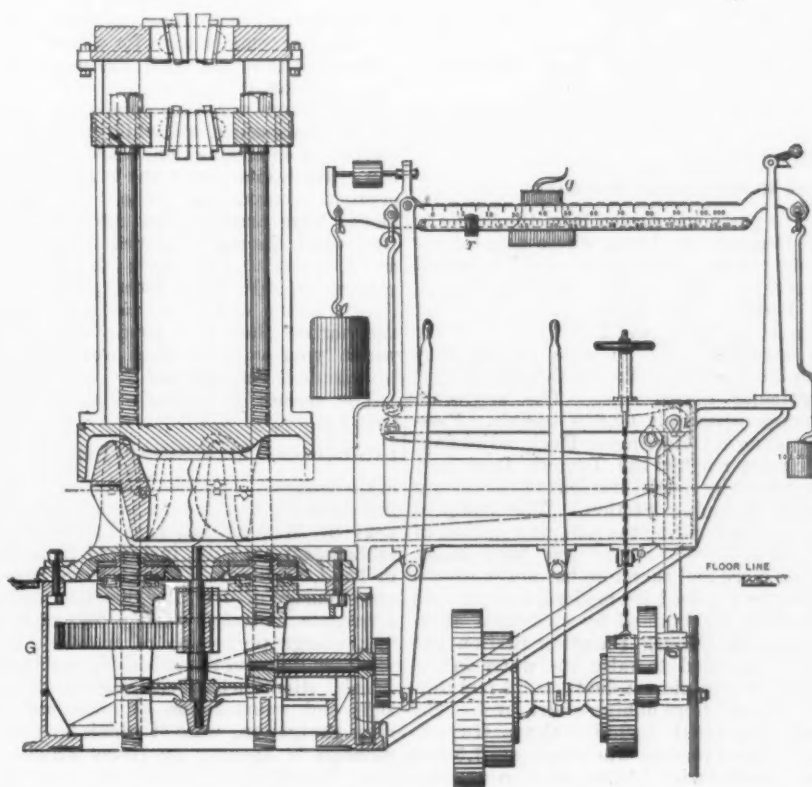
Sec. 10. Each and every person, corporation, or association of persons who shall in any manner violate any of the provisions of this act shall for each and every day that such violation shall be committed or continued forfeit and pay the sum of \$50, which may be recovered in the name of State in any county where the offense is committed or where either of the offenders reside, or in Travis County, and it shall be the duty of the Attorney-General or the District or County Attorney to prosecute for and recover the same.

Sec. 11. That any contract or agreement in violation of the provisions of this act shall be absolutely void and not enforceable either in law or equity.

Sec. 12. That the provisions hereof shall be held cumulative of each other and of all other laws in any way affecting them now in force in this State.

Sec. 13. The provisions of this act shall not apply to agricultural products or livestock while in the hands of the producer or raiser.

Sec. 14. Whereas the people of this State are without a remedy against trusts, therefore an emergency and imperative public necessity exists requiring that the constitutional rule which requires that all bills shall be read on three several days be suspended, and that this act take effect from and after its passage, and it is so enacted.



VERTICAL SECTION THROUGH AUTOMATIC TESTING-MACHINE.

is a combination of capital, skill, or acts by two or more persons, firms, corporations, or association of persons, or of either two or more of them for either, any, or all of the following purposes: First—To create or carry out restrictions in trade. Second—To limit or reduce the production, or increase or reduce the price of merchandise or commodities. Third—To prevent competition in manufacture, making, transportation, sale, or purchase of merchandise, produce, or commodities. Fourth—To fix at any standard or figure, whereby its price to the public shall be in any manner controlled or established, any article or commodity of merchandise, produce, or commerce intended for sale, use, or consumption in this State. Fifth—To make or enter into, or execute or carry out any contract, obligation, or agreement of any kind or description by which they shall bind or have bound themselves not to sell, dispose of, or transport any article or commodity, or article of trade, use, merchandise, commerce, or consumption below a common standard figure, or by which they shall agree in any manner to keep the price of such article, commodity,

the Attorney-General or District or County Attorney, or either of them, upon his own motion, and without leave or order of any court or judge, to institute suit or *quo warranto* proceedings in Travis County, at Austin, or at the county seat of any county in the State, where such corporation exists, does business, or may have a domicile, for the forfeiture of its charter rights and franchise, and the dissolution of its corporate existence.

Sec. 4. Every foreign corporation violating any of the provisions of this act is hereby denied the right and prohibited from doing any business within this State, and it shall be the duty of the Attorney-General to enforce this provision by injunction or other proper proceedings in the District Court of Travis County, in the name of the State of Texas.

Sec. 5. That the provision of Chapter 48, General Laws of this State, approved July 9, 1879, to prescribe the remedy and regulate the proceedings *quo warranto*, &c., shall, except in so far as they may conflict herewith, govern and control the proceedings when instituted to forfeit any charter under this act.

The new buildings for the New York Central Railroad, to replace those recently destroyed in the \$1,000,000 fire at the foot of Sixtieth street, in this city, will have many valuable improvements. An elevator of 1,500,000 bushels capacity that will cost \$400,000 will be built upon the old timber foundations. Piers B and D will be rebuilt, each with a two-story iron shed. A large storage warehouse, 200 feet square, will also be erected. The improvements will cost nearly \$1,000,000.

THE AMERICAN ENGINEERS IN ENGLAND.

(Editorial Correspondence.)

After a delightful run from Queenstown to the Mersey the good ship City of Richmond reached Liverpool. With the tender came the Reception Committee of the Liverpool Engineering Society and representatives of the Council of the City. Their first graceful act of hospitality, after a brief address of welcome had been pronounced and responded to, was to present magnificent bouquets to the two leading ladies of the party. Embarking on the tender, three vigorous cheers were given to Capt. E. Barff, of the City of Richmond, a proceeding which Liverpool people pronounced unprecedented, but which it was subsequently learned was highly appreciated as a spontaneous and cordial acknowledgment of the efforts made to render the trip across the Atlantic comfortable. After the customary search for spirits and cigars at the customs, a glaringly perfunctory proceeding so far as the ladies' "luggage" was concerned, the rest of the day was spent in wondering why the floor was so solid, while the night was, according to the confession of the majority, largely employed in watching the antics of the four bed-posts and enjoying the luxury of freedom of movement. On the whole, the process of getting off one's sea-legs was less distressing than getting on them.

The engineers had arrived a day earlier than expected. English hospitality was, however, equal to the occasion, so that for Wednesday afternoon (the 5th) two impromptu excursions were planned. The morning was filled by your correspondent by a call on the Mayor, in company with Henry R. Towne. Special permission was granted to inspect the magnificent Town Hall and to attend a meeting of the Town Council. It happened that bills of the Finance Committee were up for debate. One young Radical made it a point to attack those of his fellow-councilors who had gone on little junketing trips to London, especially during Derby Day, and had pocketed allowances of 5 guineas a day each for the services thus rendered. Human nature appears to be very much the same in swaying the hayseed legislator or the English town councilor. Your correspondent was particularly interested in listening to the famous "hear, hear" (pronounced he-ah, he-ah) with which English parliamentary speeches are so liberally sprinkled as evidences of approval.

In the afternoon the majority of the party split up into two bodies, one being carried off to see the Liverpool end of the Manchester ship canal works, while the other, in which were included most of the ladies, proceeded to Knowsley, the seat of the Earl of Derby.

During the course of the day invitations to visit points in the vicinity of Liverpool began to pour in upon the committee. They were pressed with such hospitable persistency that their acceptance became a duty. The embarrassments of those who represented the organization of the guests were increased very seriously through the fact that the City of New York, among whose passengers were about 100 engineers and their ladies, had not yet been telegraphed. It was impossible under the circumstances to supply our hosts with any definite information concerning the number for whom they were to make preparations. Rival attractions, too, appeared to have an unsettling effect upon the minds of the engineers themselves, so that it was apparently impossible to state at any given moment who

and how many would accept invitations to any one point of interest. That this confusion should have failed to lead to any discomfort to the visiting engineers is entirely due to the Herculean efforts of the Liverpool local committee, whose chairman was Alfred Holt, the treasurer being George Heaton Daglish, and the secretary Henry R. West. Their efforts were seconded by C. H. Darbishire, president, and J. J. Potts, vice-president of the Liverpool Engineering Society. It is the pleasant privilege of a journalist to express in behalf of his associates, in a manner less formal than can be done in resolutions, a thorough appreciation of the overwhelming hospitality shown under circumstances peculiarly calculated to increase its burdens. It is often said that a characteristic of Americans is their constant habit of comparing their own aims and their own work with that of others, with the ultimate object of excelling. If such an idea lingered in the minds of many, with reference to the reception of the Iron and Steel Institute, and, it is hoped, other kindred societies in America in the fall of 1890, its realization must now appear far remote.

On Thursday, June 6, two alternate excursions were offered to the visitors, the first being over

THE MERSEY DOCKS AND HARBOR ESTATE.

The party was driven from the hotels to the Herculean Dock, whose main feature is the range of 60 "casements," tunneled into the rock for warehousing petroleum in barrels. The front wall is Portland cement concrete; and it and the doors are so arranged that in case of fire they could contain in bulk all the oil in that particular department. The aggregate storage capacity is 60,000 barrels. Passing along the Harrington Dock, adjoining, the party reached the Toxteth Dock and then went by special omnibus to the Coburg Dock Pumping Station. The group of docks surrounding the pumping station, of about 50 acres in extent, was built many years since and therefore has not the depth of water required for modern vessels. As it cannot be obtained by structural alterations, the Coburg Pumping Station has been provided to raise the water in the docks to a minimum depth of 22 feet during all variations of high-water level. The pumping plant includes three Gwynne centrifugal pumps, whose fans are 7.5 feet in diameter with 54-inch suction and delivery pipes capable of discharging in the aggregate 800 tons of water per minute. They are driven by inverted compound condensing engines of 1500 indicated horse-power. At low neap-tides access is gained to the docks by way of the modern deep-water docks to the southward, locks being provided in the Union Dock. Thence the party proceeded to the Waterloo Dock grain warehouses, built about 20 years since after the ordinary system of "floor" warehouses, as it was necessary that they should be available either for grain or for ordinary goods. The aggregate area of the floors is about 12 acres, and they have an aggregate storage capacity of about 57,000 tons of grain. Five buckets, each capable of elevating 60 tons per hour, are situated in towers disposed around the dock. They elevate the grain to the top of the warehouse from receiving hoppers placed below the quay level. The grain is passed through hoppers to the weighing-machines, whence it falls into distributing hoppers. From there it is received on endless traveling belts which convey it to any part of the upper floor. From this floor the grain is delivered through shutters to any part of the building. Screening machinery and hydraulic lifts are also provided. All this machinery is worked by hydraulic power with an accumulator pressure of 700 pounds per square inch.

The party then proceeded to the Sandon Graving Docks, where pumps have been at work for some years for increasing the depth of water within the dock and over the graving dock sills on low neap-tides, so as to render the latter available at such times for vessels of deeper draft than would otherwise be possible. The pumping plant consists of five Gwynne Invincible centrifugal pumps. Four of them have fans 60 inches in diameter and 36-inch suction-pipes. They are driven direct by four independent high-pressure engines. On trial it was found that the maximum combined discharge of the pumps was 513 tons per minute.

The Alexandra Dock and Langton Graving Docks, next visited, were completed in recent years specially for the accommodation of the large steamers employed in the Atlantic trade. The arrangement provides for an exceptionally large amount of quay and shed space in proportion to the total area of ground occupied. The graving docks are divided by gates in the center, so that in the event of one vessel requiring dry-dock accommodation for a long time it does not interfere with the use of the lower portion of the dock.

The visitors were then conducted to the steamer Lancashire, and while crossing the river were entertained on board at luncheon at the invitation of the Liverpool Reception Committee. The Birkenhead Docks were then entered and inspected. Afterward the party steamed up the river and returned to Liverpool. A neat compliment, highly appreciated by the visitors, was the dressing of all the ships in the harbor along the route, a courtesy which your correspondent was informed by friends is very unusual.

The second party started at the same time for

LAIRD BROS.' BIRKENHEAD IRON-WORKS, at Birkenhead, opposite Liverpool. The firm is an old one, having been founded in 1824 by William Laird, and since its establishment has built, including those now in hand, 576 vessels, having an aggregate tonnage of over 350,000 tons and an aggregate indicated horse-power of 304,000, a large proportion of the work having been done for the British Government. Special attention has been given to the design and construction of steamers for river navigation, some of which have been pioneers in opening up rivers which are now important channels of commerce. Among them was the John Randolph, which, it is claimed, was the first iron steamer ever seen on American waters.

Passing through the model-room the party entered the old armor-plate shop, at present used for general work, and reached the frame-bending shop and furnace building. Near them were the slips for building two very fast torpedo gun-boats of an improved Rattlesnake type. Their dimensions are 230 x 27.5 x 14.75 feet. They have 4500 horse-power engines, and are designed for a speed of 21 knots per hour. Here, also, the Gazelle, for the Great Western Railway Company, was building. Next followed No. 5 Graving Dock, where the Argentine battle-ship Almirante Brown was being prepared for overhaul and refitting. Next was No. 4 Graving Dock, in which two twin-screw steamers, Lynx and Antelope, were being completed. They are for the Great Western Railway Company. Each is 235 feet long, 27.5 feet beam and draws 13 feet 2 inches. Their engines are 1600 horse-power, and their speed is estimated at 16 knots. In the engine-shops the machinery for the Antelope and Gazelle and the 3300 horse-power engines for the Russia were in course of construction. Near No. 4 Graving Dock is a 50-ton crane for masting and boiler vessels, and near it the Russia, a 373-foot steamer for the Hamburg and American Steam Packet Com-

pany, was building. No. 3 Graving Dock, in which the man-of-war Agincourt and other large vessels were built, is permanently covered over, having overhead power-driven traveling cranes, which traverse in two directions. After seeing the smith's shop, Nos. 1 and 2 Graving Docks, sawmills, joiners' shops and mold lofts, the party was driven to the new boiler-works of the firm, which were completed in September last. They have already turned out boilers of about 30,000 horse-power, many of them of an exceptional size, two of the largest having weighed about 95 tons each. The ground covered by buildings is nearly 6000 square yards, the factory consisting of four principal spans parallel to one another. The largest of these is reserved for the erecting work, being 236 feet long, 53 feet wide and 58 feet high. An annex is the shop for receiving and preparing the material ready for erecting. Another annex is devoted to lighter work, and a third is used as the smith-shop. At the quay adjoining the boiler-works the Hamburg and American Steam Packet Company's steamer Columbia is now nearing completion. Her dimensions are 463 x 56 x 36.3. She is propelled by twin screws, with triple-expansion engines of 12,500 indicated horse-power, supplied with steam at 150 pounds pressure from nine cylindrical boilers.

From the Columbia the party was driven through Claughton and the Birkenhead Park to the Town Hall, where they were received by the Mayor and were shown through the building. They then proceeded to the residence of William Laird, where they were hospitably entertained, and after luncheon and speech-making were photographed in a group. The next visit on the programme was to

THE MERSEY TUNNEL RAILWAY,

which connects Liverpool with Birkenhead and the Wirral Peninsula of Cheshire, the width of the Mersey at that point being 1320 yards. The road is constructed almost entirely in tunnel, of double-line width, and is lined throughout with brick in cement. Under the river the tunnel is in sand-stone rock, with an average cover of 30 to 35 feet, the lowest rail-level being 145 feet below mean-level water mark. The gradients are therefore somewhat severe for English practice, being on the Liverpool side 1 in 27. The drainage of the tunnel is dealt with by two pumping-shafts, one on each side of the Mersey, the water draining to the shafts through drainage headings beneath the tunnel. On each side of the river there are three pumping-engines of 200 horse-power, of the compound walking-beam and compound horizontal type. The steam-cylinders are 36 and 55 inches in diameter, the pump-rams being 40 inches in diameter by 15-foot stroke. The tunnel is ventilated by four 40-foot Guibal fans 12 feet wide, driven by 120-horse-power compound condensing engines running at 45 revolutions. They exhaust about 200,000 cubic feet of air per minute from a gallery 7 feet 2 inches in diameter, running parallel with the tunnel, into which there are frequent openings, with sliding doors, so that the exhausting action of the fans can be distributed or concentrated at pleasure. On each side of the Mersey are hydraulic lifts, or elevators, for raising passengers from the under-ground station platforms to the street level 100 feet above. The elevator rams are 18-inch steel tubes in 12-foot lengths, secured together. The pressure is 90 to 100 pounds per square inch, being supplied from tanks placed in lofty water-towers, which form striking architectural features of the river-side stations. These tanks are kept full by small pumping-engines. The cars accommodate 100 passengers at a time.

In the evening the American engineers

were entertained in a sumptuous manner at a reception in the beautiful Town Hall by E. H. Cookson, Mayor of Liverpool, a very large number of the leading citizens being invited to meet them. The affair was exceedingly brilliant, the series of wonderful reception-rooms of the Town Hall being thronged.

TOUR THROUGH NORTH WALES.

One of the parties started on the 7th, under the auspices of the London and Northwestern Railway, on a tour through North Wales, visiting first the ancient city of Chester, famous for its Roman wall, castle, cathedral and rows, and driving to Eaton Hall, the seat of the Duke of Westminster, reaching Llandudno, the greatest of Welsh watering-places, in the evening. Favored by glorious weather, a drive was taken around the Great Orme's Head in the morning. In the afternoon a visit was paid to Conway Castle, built in 1284 by Edward I; Bettws-y-Coed, a charming spot, being reached in the evening. There Sunday was spent quietly. Monday again found the party on its travels, Blaenau-Festiniog, with its great slate quarries and its quaint railway, being visited in the morning. From Port Madoc coaches conveyed the engineers through Tremadoc, Aberglaslyn, Beddgelert and through the pass to Llanberis. Tuesday morning, June 11, was spent in a visit to the Llanberis lake and fall and the ruins of Dolbadarn Castle, a short run by rail then taking the tourists first to Carnarvon, with its ruins, and to Menai Bridge. Wednesday morning was given over to a drive to Anglesea to visit the Suspension Bridge and Stephenson's famous Britannia Tubular Bridge. In the afternoon the party left for Bangor, passing through Llanfairfechan, Penmaenmawr, Conway and Colwyn Bay. Crewe is to be reached in the evening, and at 10 o'clock at night the party expects to roll into Euston Station, in the great metropolis.

A second party started from Liverpool to Crewe on Friday morning (7th) to visit THE CREWE SHOPS OF THE LONDON AND NORTHWESTERN RAILWAY,

where they were received by F. W. Webb, the well-known mechanical engineer, who has during the past few years done so much to develop the compound locomotive. The party were received at the offices of the company by a band playing national airs, while one of the latest of Mr. Webb's engines moved along the track before the assembled engineers. Side-tracked near by was a long array of the different types of engines built at the Crewe shops. Our hosts at once conducted the visitors into the great drawing-office, where an elaborate lunch was provided. Speeches followed, J. P. Bickersteth, vice-chairman of the London and Northwestern Railway Company, being in the chair. In responding to a toast by W. H. Wiley, Mr. Webb gave some data relating to the company of whose service he is so distinguished a member. The railroad has a capital of \$528,000,000, its annual gross revenue being \$51,500,000 and its annual expenditure \$26,500,000. It operates 2500 miles of road and carries 57,000,000 passengers, whose tickets call for the consumption of 50 tons of paper. Its tonnage of freight is 36,000,000 tons annually, the engine mileage last year having been 55,525,334. Last month, with a mileage of 4,750,000, only one engine in the passenger service was slightly out of order, so that Mr. Webb undertook to say that he could, barring accidents due to the permanent way, go twice around the world with one of his engines without making the slightest repairs. During the last year, besides the ordinary service, the road ran 41,314 special passenger trains, 47,223 special freight trains and 78,285 special cattle and mineral trains. The company own 53,000

freight-cars, 5600 passenger-cars, 2500 engines and 20 steamships. The Crewe locomotive works are a part of the manufacturing establishment of the railroad company. They occupy 116 acres of ground, the covered area being 36 acres. The plant consists of four 5-ton Bessemer converters, in groups of two, placed opposite one another on either side of the deep pit. Following it, in the same line are the open-hearth furnaces, one of them, a 20-ton furnace, being just completed. The rail department contains a rather old-fashioned three-high rail-train, driven by a fine horizontal engine with Corliss gear. The route then lay through the points and crossing department into the boiler-shop, where, among other matters of interest, the new Webb corrugated boiler was inspected. To the majority of the engineers the most interesting sight was the flanging-presses, one being a 75-ton press for flanging boiler-fronts, and the second, over 200-ton, for punching out and simultaneously flanging the fire-door. The works have a very large plate mill, and they also roll angles and shapes. They are fitted with 8-ton, 30-ton and 10-ton hammers, and have a tire mill, steel foundry and iron forge. Thence the visitors went to the signal-shop and paint-shop, after which they returned to the train and were conveyed to the millwright's, joiner's shops, the sawmills and through the smithy into the locomotive-erecting, wheel and fitting shops. In the meantime the ladies had been entertained at tea at the fine residence of Mr. Webb.

The majority started by special train to Manchester, where they were joined by another body, who in the interval had paid a visit to the

HORWICH SHOPS OF THE LANCASHIRE AND YORKSHIRE RAILWAY.

These works are of particular interest, since they embody the latest practice in English engineering work. Starting with a clean sheet of paper, the entire disposition of the plant could be made with special reference to requirements, building having begun in 1886. They were erected for the purpose of repairing and renewing the whole of the locomotive stock and carrying out the mechanical engineering work of the Lancashire and Yorkshire Railway Company. The land inclosed includes 85 acres, located between the Chorley New Road and Horwich and Red Moss, the covered area of the work-shops being 13½ acres. The first point of interest aside from the offices, laboratory, test-room (with a 100-ton machine) and general stores is the boiler-shop, 364 x 111 feet. It is fitted with a pair of hydraulic pumps and accumulator, two large fixed hydraulic riveters for boiler work, each having a hydraulic overhead crane for lifting boilers when riveting, three portable hydraulic riveters on swing cranes bolted to walls and columns and three overhead traveling cranes.

The smith's shop is provided with 12 double and 31 single hearths, a reheating furnace, bolt and nut making plant, hammers, &c. The forge, 362 x 111 feet, has a 14-inch merchant mill and an 8½-inch guide mill, with Siemens regenerative furnaces for reheating. The steel-works are equipped with two open-hearth furnaces, having a high level tramway for carrying the ladle and a narrow-gauge track, which connects with the forge and rolling-mill, for the mold trollers. The whole of the furnaces in the steel-works and the rolling-mill are heated by gas, made from a series of Wilson gas-producers. Then follows the foundry, 212 x 111, equipped with two cupolas, supplied with blast by a Root blower. Hydraulic power is used for working the cranes, in addition to which there are two overhead rope power traveling cranes. A second foundry, 62 x 128, with two cupo-

las, is used for casting the chairs used for the permanent way. A staging is provided for "fettling" the chairs, which are then placed on an endless chain, which conveys them to the railway cars for shipment. Special large shops are provided also for a brass foundry, tinsmith's and copper-smith's shop, for testing, repairing and renewing the electrical instruments used, for wood-working, and for the manufacture of signals, springs, points and crossings. The fitting-shop, 400 x 111 feet, is provided with a large number of special tools for dealing with locomotive work, including a large milling tool for cutting out crank-axle webs, crank-axle lathes, milling, planing and slotting machines. These are driven by two wall engines, placed at the end of the shop, giving motion by means of bevel gearing to four ranges of shafting, running longitudinally, and to four 5-ton high-speed rope-jib traveling cranes, which control the principal heavy machines. By far the showiest of the buildings is, however, the erecting-shop, which is not less than 1520 x 118 feet. It has been arranged for the repairs of existing and the building of new engines and tenders. It is supplied with 20 30-ton overhead power-cranes, driven by wall engines. Their handling great engines in so large a building was an impressive sight. A chain shop, 110 x 27, and a chain smithy, 64 x 28 feet, are provided with a large hydraulic testing-machine for testing all chains before they are sent out for use. The company have their own gas-works, and have built for the convenience of their employees a dining-room, to accommodate 1000 men, and a *café* and reading-rooms.

The party was hospitably entertained at luncheon by the company, its chief engineer, J. A. F. Aspinall, acting as host. A series of speeches followed the usual toasts to the Queen, the royal family and the President of the United States, which apparently are a feature of all such gatherings. The party was then conveyed by special train to Manchester.

Reaching Manchester in the afternoon, the party visited Owens College, the Lancashire and Yorkshire Company's car-works, at Newton Heath, the Salford Corporation sewage works, and a number of other establishments thrown open to them. In the evening they were joined by the party from Crewe, and after a reception by the Mayor of Manchester sat down to a most elaborate banquet as the guests of the Manchester Engineers' Reception Committee, of which William Bradford was the president and Thomas Ashway the secretary. Leaving Manchester, after having spent the morning visiting the Manchester Ship Canal Works and a number of engineering and manufacturing establishments, the members of this division rode to Chester, where Sunday was spent. Monday brought them to Rugby, Leamington and Warwick, whose famous castle they visited. Tuesday morning they reached Stratford-on-Avon, and driving thence to Kenilworth a visit was paid to the castle, Oxford being reached in the evening. Wednesday was to be spent visiting the colleges, London being reached in the evening.

FUTURE MOVEMENTS OF THE ENGINEERS.

The tours through some of the most picturesque parts of England were arranged in order to pass the Whitsuntide holidays. To judge from the programme settled upon by the London engineers, the serious business of sight-seeing is then to begin. On Thursday, June 13, there will be a special choral service at Westminster Abbey, followed by an address by the Dean, Dr. Bradley, on the sacred and historical associations of the Abbey. At noon the Houses of Parliament are to be visited. In the afternoon there is to be a formal reception at the Institution of

Civil Engineers, followed later by the presentation of an address by the president, Sir John Coode, K.C.M.G. In the evening there will be a dinner at Guild Hall "by the express sanction of the Lord Mayor, Aldermen and Court of Common Council of the City of London."

Friday two parties are arranged to go down the Thames to visit docks, drainage and sewerage works, ship-building and torpedo yards, the afternoon being given to a visit to Lambeth Palace and the Doulton Potteries and art studios.

Saturday one party goes to Windsor to be entertained at the Albert Memorial Hall, to be followed by a drive through Windsor Great Park to Virginia Water. Another group is given an opportunity to attend a performance of the "Midsummer Night's Dream" at Copped Hall, Totteridge. In the evening a reception will be given by Lord Brassey. Monday St. James' Palace, Buckingham Palace and the Royal Mews will be visited, the evening being reserved for a garden party at Holly Lodge, Highgate, by the invitation of the Baroness Burdett-Coutts and Mr. Burdett-Coutts, M.P.

Tuesday, June 18 and 19, and Wednesday are given over to visits to works, to Hampton Court Palace and the Royal Botanic Society's Flower Show in the Regent's Park. Thursday a special train and boat will take the engineers to Paris.

The German engineers have evidently been seized by the same eager desire to entertain their American brethren. At a meeting of the Verein Deutscher Eisenhüttenleute and other organizations at Düsseldorf it was resolved to extend a cordial invitation to them. Herr Schroeder, the secretary of the society, traveled specially to Liverpool as its bearer, and it is possible that at least a small number of American engineers will avail themselves of an exceptional opportunity to visit the centers of industry of Westphalia and the Rhine provinces. It is now intimated that the iron masters of Lorraine are organizing to capture some of the Americans as their guests.

Open-Hearth Furnace with Detached Melting-Chamber.

The accompanying illustrations, furnished by L. G. Laureau, of Philadelphia, show a modification of the Siemens furnace, embodying features which, after a trial of several years' duration, have proved

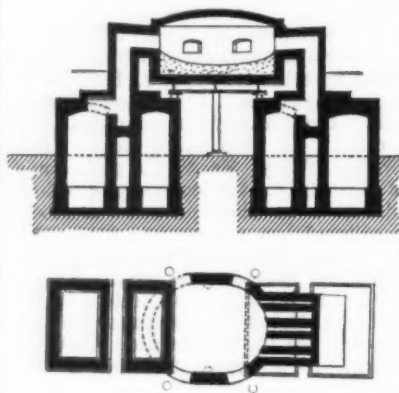


Fig. 1.

worthy of consideration. The furnace belongs to the type, now rapidly becoming common, where the melting-chamber is completely detached from the regenerators and the gas and air ducts. The melting-chamber is oval instead of round (as in some furnaces of the same type), so as to give a greater travel to the flame from port to port, thus allowing it to spend its energy in the furnace itself and

reducing its cutting action on the outgoing ports. The gas and air ports are made to open into the melting-chamber, side by side. This arrangement causes the flame to spread well across the entire furnace from front to back, melting as fast at the doors as in the center. It

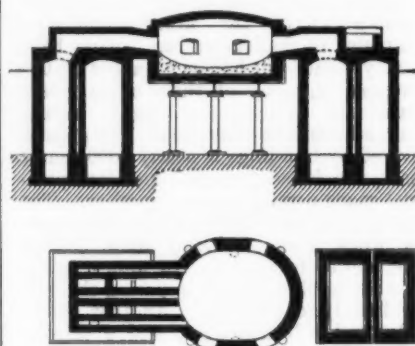


Fig. 2.

allows a long line of contact between the air and gas and furthermore makes the ports easily accessible for repairs. The cover bricks to the horizontal gas and air ducts outside of the furnace can be readily removed and the ports can be repaired rapidly from the outside without cooling

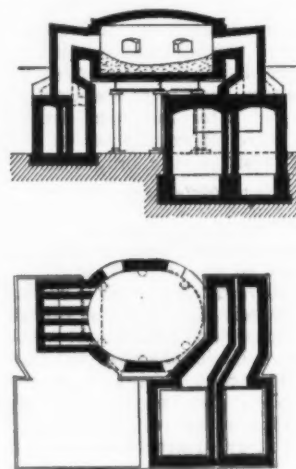


Fig. 3.

the entire furnace and regenerators. The roof is held in a wrought-iron band and rests upon the melting-chamber walls without being bound into them. It is made high so as to allow free play for the radiating effects of the flames. In furnaces of not over 12 tons capacity five ports (two large air and three small gas) have proved ample and efficient. In furnaces of 15 tons capacity and over seven ports should be used.

The three cuts illustrate how this type of furnace can be modified according to circumstances. Fig. 1 shows the normal furnace; Fig. 2 a furnace suited to a location where water is found close to the general level; while Fig. 3 shows the same furnace where space lengthwise of the structure is limited. The same arrangement of parts has been used in heating furnaces with marked success.

The area of the Territories of North and South Dakota, Montana and Washington is equal to the combined area of the German Empire, Great Britain and Ireland, the Netherlands and Switzerland, the former being 361,588 square miles and the latter 361,500 square miles. The European area contains a population of over 90,000,000; the American area has a present population of less than 1,000,000.

THE WEEK.

An 8-inch pipe line from the Ohio oil fields to Detroit will be completed by September 1.

The Interstate Commerce Commission have issued a new and revised edition of the rules of practice before that body, adding several new ones that have been found necessary by experience, and containing also concise and complete forms for complaints and other proceedings before the commission. Care has been taken to make these rules as simple as possible, to enable business men, if they desire, to prepare their papers themselves. The commission desire to have the rules distributed, and copies may be procured without charge upon application to the secretary.

New York City is able to boast of having within its boundaries 294 individuals or firms each good for \$1,000,000 or upward.

An eight-story brick building, fire-proof throughout, is soon to be erected for the New Jersey Central Railroad Company on the corner of Liberty and West streets. The ground dimensions will be 200 feet on Liberty street and 100 feet each on West and Washington streets. The intention is to lease a considerable portion of the building to firms in the coal trade. The architects are Peabody & Stearns and the cost of the structure will not be less than \$500,000. The building will be finished May 1, 1890.

The Castle Garden Emigration Commissioners urge upon Secretary Windom the necessity of making their position a Federal office.

A maritime exhibition of a novel character is to be given in Madison Square Garden this coming fall, under the direction of C. S. Hill, secretary of the American Shipping and Industrial League. It is proposed to bring together samples of the products of 200 distinct industries which are either directly or remotely connected with the shipping interests of the country, and to contrast American machinery, models of vessels and appliances of various kinds with those of foreign origin. Machinery Hall will be devoted to machinery in motion. The peculiar feature will be a canal 25 feet wide and one-eighth of a mile long, to be navigated by steam launches and craft of various descriptions, and a central stage will serve as an arena for naval maneuvers.

The Minneapolis industrial exhibition opens August 21 for one month.

Two lads of a mechanical turn of mind were experimenting in Philadelphia on Saturday with an old kitchen boiler, pieces of gas-pipe and a miniature steam-engine almost 18 inches in length, which they proposed to connect with an ice-cream freezer. From some cause unknown the boiler burst, killing them both.

Howard, who was so successful in buying machinery for the bogus electric sugar process, was rewarded for his enterprise with a sentence of nearly nine years in the New York State prison.

The new city of Guthrie, in Oklahoma, was struck by a cyclone on the 20th inst., and scores of houses, of which there are several hundred in course of erection, were thrown down.

The manual-training school of St. Louis, which has a membership roll numbering 241, had its annual exhibition last week, and 40 graduates received their diplomas. The class forging iron and steel, 24 in number, attracted much general interest. Professor Woodward stated that the applications for membership were far in ex-

cess of the present capacity of the school, and he predicted that ten years hence would witness a greater number of manual-training schools in this country than was dreamed of in the philosophy of those who were to-day encouraging the belief that the idea and theory of such institutions were not in keeping with successful mental strength and development.

The new Hamburg line of steamships to Philadelphia will receive no outward cargo from that port, but load in Baltimore for the homeward trip. Philadelphia merchants protest against the so-called "boycott," but without success. The steamship and railroad companies are too closely allied.

Under the new law of Pennsylvania, already in force, children under 12 years of age cannot be employed in manufacturing establishments, and over that age and under 16 their employment is limited to six hours a day.

Montreal papers complain that Canada is "knocked out" of the export business in wheat and corn by the competition of American ports.

The Jay Gould stockholders still control the Pacific Mail Steamship Company.

The announcement is made that the last spike has been driven in the Georgia Pacific Railway. This is a leased line of the Richmond and Danville, and has been extended to a connection with the Missouri Pacific and the Mississippi River, in furtherance of the plan agreed upon when George Gould was made a director in the Richmond Terminal Company, who own the Richmond and Danville. This makes another through trunk line by which the traffic from the Southwest can be carried to the Atlantic sea-board.

A Shanghai dispatch says Li Hung Chang has accepted the control of railways in the north of China, and that tenders will soon be invited for the construction of a railway from Peking to Hankow, indicating the final triumph in that country of the progressive element as against the ultra-conservative.

The new Brooklyn city directory contains 195,220 names, a gain of 6254 over last year. The entire population is estimated at 880,000 to 900,000.

The Third Avenue Railroad Company, New York, having obtained authority from the Legislature to substitute cable-power for horses, and two-thirds of the property owners on the route having already given their consent, it is probable that the final step preparatory to making the change will be taken by asking the sanction of the Railroad Commission.

The New York Commissioner of Public Works, Mr. Gilroy, has recommended to the Board of Estimate and Apportionment the kind of pavement that should be laid down in the principal streets in this city, in accordance with the purposes of a special act of the Legislature authorizing the expenditure of \$3,000,000 during the next three years for street improvement. "From the experience of the past 15 years with pavements laid during that time," the Commissioner says, "it is found that the most suitable and durable pavement for streets of the first class, the great avenues of trade and commerce, is a pavement of granite blocks, according to specifications now in use, with tarred joints and concrete foundation. No other pavement is known which will present equal resistance to the heavy wagon traffic in those streets and at the same time retain an even surface and give equally good foot-hold to horses. The tarring of the joints is useful in preventing the percolation of water through the pavement into the soil, which frequently causes settlement of the soil under the pavement

and corresponding depressions on the surface. For streets of the second class the stone blocks may be laid on the ordinary sand foundation or bed. In the purely residential streets a good asphalt pavement, laid on substantial foundation, is the more suitable. It should not be laid, however, where the grade is steep, because in such cases it would not afford a safe foot-hold to horses."

The opening of the Tennessee River to Chattanooga next September, into the heart of the mineral region in the South, will have an important effect on transportation rates throughout that section of country. Steamboats will be able to reach Chattanooga from New Orleans, Pittsburgh or the head of navigation on the Mississippi. A prominent railway-traffic manager says that boats at Chattanooga, otherwise returning empty, can carry pig-iron at a very low rate; they can carry it with profit to St. Louis for \$1.25 a ton, whereas the present rate is \$2.25 per ton to Cincinnati and \$3 to St. Louis. The opening of the Tennessee River, it is affirmed, will give the pig-iron producers on or near it an increased profit of \$1.75 per ton and enable them to compete with Pennsylvania pig to even better advantage in the Western markets.

The foundation walls are being laid in Duluth of the Chamber of Commerce building, to cost \$250,000.

The Wood-Acid Trust organized in Binghamton, N. Y., last April are complacent in the fact that the price of crude wood alcohol has advanced from 47 to 57 cents a gallon, or over 20 per cent., and there is a liberal advance also in the prices of the accompanying products of the factories—acetate of lime and naphtha. Wood alcohol offers itself as a cheap substitute for grain and fruit alcohols in mechanics, manufactures and the arts, and it is upon these branches of industry that the burden of the heavy increase of prices chiefly falls.

The old copper mine near Bristol, Conn., has been opened and is being worked by a large force of men with improved machinery and implements for mining. The managers of the new company are confident of fair returns.

The ten thousandth locomotive built at the Baldwin Locomotive Works, Philadelphia, was shipped from that establishment last week to the Northern Pacific Railroad for service on the mountain division of that road. This engine is remarkable, not only in bearing so high a consecutive number among engines turned out from a single establishment, but in marking a distinct advance in the progress of locomotive construction, which, among other causes, has made the cost of rail transportation in the United States less than in any other country in the world. It has a weight one-fourth greater than the largest freight locomotives of the Pennsylvania Railroad, and can haul, it is said, on a grade of 116 feet per mile, combined with reversed curves of 10°, a train weighing 535 tons, of 2240 pounds, of cars and load, or 20 loaded cars. On easier grades, of say 52½ feet per mile, or 1 foot per 100, its power is estimated at 1000 tons, exclusive of its own weight. Its actual weight in working order, exclusive of tender, is 150,000 pounds; cylinders, 22 x 27 inches; driving-wheels, four pair coupled, 50 inches. The Baldwin Locomotive Works were established in 1833, and 28 years, or until 1861, were required for the completion of the first thousand locomotives. But nine years, or until 1870, were required for the second thousand. The third thousand was completed in 1872, the fourth in 1876 during the Centennial, and the fifth in 1880. Five thousand more were constructed during the nine years since.

MANUFACTURING.

Iron and Steel.

The two new furnaces, &c., of the Nashville Iron, Steel and Charcoal Company, at West Nashville, Tenn., are to be sold on July 2. The sale is made necessary from lack of capital, the original subscribers failing to pay subscriptions to stock.

The laboratory at the Homestead Steel Works of Carnegie, Phipps & Co., Limited, at Homestead, Pa., was destroyed by fire last week, causing a loss of about \$2000.

We are advised that the report that the Emma Furnace, of the Union Rolling Mill Company, of Cleveland, Ohio, had been sold to the Cleveland Rolling Mill Company is without foundation. The furnace named was blown in recently and is producing about 140 tons of Bessemer pig-iron per day.

One of the Himrod furnaces of the Brier Hill Iron and Coal Company, at Youngstown, Ohio, is out of blast at present, undergoing repairs.

Notice has been posted by the Glasgow Iron Company, of Pottstown, Pa., of an advance of puddlers' wages from \$3 to \$3.25 per ton. This will go into effect on and after the 1st of July, and will affect all the men in the puddling department of the iron-works.

The Pennsylvania Construction Company, of Pittsburgh, have been awarded the contract for the iron roof for the post-office building, now in course of erection in that city. The contract price for the work is \$50,740.

A number of the molders in the employ of the Pittsburgh Steel Casting Company, at Pittsburgh, went out on a strike last week on account of a disagreement in regard to wages. The trouble was afterward settled and the works are now in full operation.

At Pittsburgh last week Frank S. Layng filed a bill in equity against the A. French Spring Company, Limited. The capital stock of the company is \$500,000, of which Mr. Layng claims that he owns \$31,250. He states that in 1888 Aaron French, chairman of the spring company, without the knowledge or consent of the plaintiff or the Board of Managers of the company, purchased stock of the Bolton Steel Company, of Canton, Ohio, to the amount of \$87,500, a controlling interest. In payment, Mr. French gave three notes for \$25,000 each and the balance in cash. The purchase was professed to have been made on behalf of the spring company and was charged up to them. The Board of Managers afterward ratified the purchase. As a result, the regular dividends of the spring company have been suspended. Mr. Layng desires the court to enjoin the payment of the three notes out of the partnership funds, and that the Board of Managers be required to indemnify the company for any loss by reason of the purchase; also that the court decree that the purchase of the Bolton Steel Company's stock was not within the scope of the business of the partnership, and the purchasers be declared to have made the purchase on their own account.

The National Tube Works Company, of McKeesport, Pa., have recently purchased a large hotel building at that place, and will convert it into an immense sample-room for displaying all sizes and grades of pipe.

The rolling-mill of the Wheatland Iron Company, at Wheatland, Mercer County, Pa., which has been idle for some years, has been put in operation under the management of Henry Friend, of Pittsburgh. John Tomlins, formerly with Cartwright,

McCurdy & Co., of Youngstown, will have charge of the rolls. They will roll iron for 6-inch pipe, 32 inches wide and $\frac{1}{4}$ inch thick.

Ella Furnace, at West Middlesex, Pa., operated under lease by the Wheeler Furnace Company, of Sharon, Pa., is out of blast at present, undergoing repairs. As soon as these are completed it will be put in operation again, as the firm have some large orders on hand for pig-iron.

From the Norristown, Pa., *Register* of the 19th inst. we take the following: "The work of rebuilding the McHose Furnace began this morning. The *débris* caused by the furnace being chilled some time ago has been cleaned out. The work of rebuilding was delayed a few days pending the arrival of a large iron cylinder which will encircle the bottom of the furnace, the idea being to render it less liable to chill. The device is a new feature to furnaces in this part of the State."

Two of the blast-furnaces of the Cambria Iron Works, at Johnstown, Pa., are in blast, and the other furnaces, the Bessemer Steel Works and the mill department will soon be running. The plant of the Gautier Steel Works was totally destroyed, but will be rebuilt and put in operation as soon as possible.

The Lehigh Valley Railroad Company have made a reduction of from 4 to 7 cents per ton in the freight on furnace coal to the blast-furnaces along their line, which places these establishments, so far as the coal supply is concerned, on about the same basis as the furnaces along the Philadelphia and Reading Railroad.

A San Francisco telegram, dated June 19, states that H. W. Hammond, representing an English syndicate, has selected a site at Vallejo, directly opposite the Mare Island Navy Yard, for extensive iron and steel works, and that \$10,000,000 has been subscribed for the purpose by English capitalists.

The Secretary of State of Illinois has issued a license to the East Chicago Tin-Plate Company, at Chicago, to manufacture iron, steel, tin-plate and all products of steel and iron; capital, \$250,000; incorporators, Edward L. Lamb, Zenas Bruno, William H. Smith.

The Paige Tube Company have been organized at Warren, Ohio, to succeed the Warren Tube Company, of that place. The new concern is composed of D. R. Paige, Albert Paige and O. C. Barber, of Akron, Ohio, and several other gentlemen. Arrangements are now being made to put the works in operation and it is expected they will be operated full time in the future. T. S. Bray, formerly manager of the tube department of the Riverside Iron Works, at Wheeling, W. Va., has been secured as superintendent.

McClure & Schuler, engineers and contractors, of Pittsburgh, have just closed a contract with the Riverside Iron Works, of Wheeling, W. Va., for the erection of a new blast-furnace in place of the one they now have at that place. It will be fitted up with three Massick & Crooke's hot-blast fire-brick stoves, of which McClure & Schuler have the exclusive control in this country. In October of last year there were but three of these stoves in operation in this country, those erected by Shoenberger, Speer & Co. at their No. 2 Furnace, at Pittsburgh, Pa. Since that time the following list of stoves have been put in operation: Three for the Williamson Iron Company, at Birmingham, Ala., 16 feet 6 inches x 62 feet; three for the North Chicago Rolling Mill Company, at Bay View, Wis., 18 x 65 feet; three for the Brier Hill Iron and Coal Company, at Youngstown, Ohio, 16 feet 6 inches x 62 feet; three for the Thomas Iron Company,

at Niles, Ohio, 16 feet 6 inches x 62 feet. In addition to the above the following list of stoves are in course of erection and will soon be completed: Three for Shoenberger, Speer & Co., at Pittsburgh, 16 feet 6 inches x 62 feet; two for the Paducah Iron Company, at Paducah, Ky., 16 feet 6 inches x 62 feet; three for the Bellaire Nail Works, at Bellaire, Ohio, 18 x 65 feet; three for the Brier Hill Iron and Coal Company, at Youngstown, Ohio, 19 feet 6 inches x 70 feet; one for the Chicago Furnace Company, at Chicago, 20 x 60 feet, to supplement their present fire-brick stoves, and four for the Carrie Furnace Company, of Pittsburgh, 19 feet 6 inches x 70 feet. The last named are about completed and the new furnace will be blown in not later than July 15. From the rapid manner in which these stoves have been adopted it is evident that they have given satisfaction wherever introduced.

We are informed that the report that Jones & Laughlins, Limited, proprietors of the American Iron and Steel Works, at Pittsburgh, had signed the Amalgamated scale for the coming year is without foundation. Up to Monday, the 24th inst., the scale had not been presented to the firm, and for that reason they were unable to say whether they would sign it or not when presented.

The Oxanna Nail Factory, at Oxanna, Ala., has begun the manufacture of cut nails.

Furnace No. 1 will blow in at Talladega Ala., the last part of July, and the city will have a great celebration.

The American Association, Limited, whose general offices are at Knoxville, Ky., inform us, under date of the 18th inst., that the statement going the rounds of the papers as to the contract made with that company by a Northern syndicate for the erection of iron and steel works in Middlesborough, Ky., is in the main correct. But, pending certain negotiations now current in England between the association's board of directors and the representative of the syndicate, they are not at liberty to publish details. The matter now in negotiation is a question of royalty and area.

Machinery.

The Columbus Machine Company, of Columbus, Ohio, are at work on an order for three blowing-engines on order of James Leffel & Co., Springfield, Ohio, for the use of the Bookwalter Iron and Steel Company in the new Bookwalter process of steel-making. The engines are of 40-inch diameter and 2-foot stroke. An order is also booked for a similar engine of still larger size.

The large works of the Westinghouse Air Brake Company, at Allegheny City, Pa., are being operated only half time at present, owing to a lack of orders.

Last week notices were sent out by the Westinghouse Electric Company, of Pittsburgh, that a special meeting of the stockholders of the company will be held June 27 to consider a proposed agreement between the company and the Westinghouse Electric and Mfg. Company, by which certain stocks, claims and accounts of the former company will be transferred to the Westinghouse Electric and Mfg. Company. This is regarded as a move to consolidate under one charter the present electric company and all their branches or controlled and leased corporations with one name and one set of officials, thus economizing greatly in the matter of running expenses.

Chaplin, Fulton & Co., Limited, of Pittsburgh, manufacturers of syphon pumps, injectors and a general line of machinery, report that they have recently secured orders for the entire systems of

gas regulators from the Dayton Natural Gas Company, of Dayton, Ohio; the Wayne Natural Gas Company, of Fort Wayne, Ind., and the Indiana Piping and Construction Company, of Logansport, Ind. They have already shipped to Dayton 2 12-inch high-pressure regulators and 3 8-inch low-pressure regulators, which are now in operation and which will be followed by 12 6-inch low-pressure regulators to complete the system. Their order from Fort Wayne calls for 2 12-inch high-pressure regulators and 12 6-inch low-pressure regulators. At Logansport they have 2 8-inch low-pressure regulators and 5 6-inch low-pressure in operation.

Burnham, Parry, Williams & Co., of the Baldwin Locomotive Works, are about to add still further to their already extensive plant by the erection, at Fifteenth and Spring Garden streets, Philadelphia, of two large buildings for the more convenient prosecution of their business. One of the buildings will be six stories high, with a front on Spring Garden street of 80 feet and depth of 80 feet. This is called the pattern-storage building. Connected with this, on Fifteenth street, and running south 138 feet, with a width of 34 feet, is to be a one-story sand and oil house. Both buildings will contain vaults and cellars, the roofs of which are to be covered with asphalt paving blocks, and the floors concrete. All the inside doors are to be made fire-proof. The cost is about \$75,000.

Freeman Wire Company, St. Louis, Mo., are filled with orders, so much so that they have been compelled to increase their working force. Among orders lately received by them they mention wire and iron cemetery railings, an elevator front for a large manufacturing establishment in St. Louis, and a number of orders for office railing, &c., for local points.

A contract for two large duplex gas compressors and boilers for the Kentucky Rock Gas Company was placed with the Clayton Air Compressor Works, No. 43 Dey street, New York. The compressors have a capacity of 2,000,000 cubic feet per day and are to compress the natural gas at the wells to a pressure of 200 pounds per square inch and force it a distance of 32 miles to Louisville, for light and power purposes. That the Clayton air compressors are eminently suitable for this purpose has been demonstrated by their performance at the natural gas fields of Bradford and Wellsville.

The Thomson Electric Welding Company have removed their offices from the Mason Building to the new Fiske Building, 89 State street, Boston, where they have more commodious rooms. At the works in Lynn, Mass., 80,000 square feet of floor-space have been recently added and a large quantity of new machinery has been put in.

Among the recent purchasers of the patent friction covering for pulleys now being manufactured by the National Pulley Covering Company, of Baltimore, are the following: Eagle Lock Company, Terryville, Conn.; W. H. Hyde & Son, Newark, N. J.; J. E. Clarke, Columbia City, Ind.; James Clarke, Warren, Pa.; A. E. Spink & Co., Washington, Ind.; J. G. Hoffman & Sons, Wheeling, W. Va.; Smelting Works, Salt Lake City, Utah; G. W. Campbell & Sons, Kane, Pa.; Eagle Pencil Company, New York; Schultz Bros., Philadelphia, Pa. The company have recently appointed S. C. Nightingale & Childs, 134 Pearl street, Boston, their agents for New England.

Hardware.

The Gulf Wire Mill Company have commenced operations at New Orleans, manufacturing barb wire for the Southern market. Hitherto all the wire of this kind used in the Southwest—and very

large quantities of it are consumed in Texas—has been brought from the Eastern mills by way of New York, or from St. Louis. A short time ago the company were organized for the manufacture of barb wire. Ground was purchased on the corner of St. Joseph and Peter's streets, and works erected. The factory has a capacity of 40,000 pounds of wire per day, to be increased if the business is found to be profitable. Max Herman is president of the new company, I. M. Wiemann vice-president and Fred. Peters secretary. They claim that the wire can be manufactured at New Orleans at from 10 to 15 per cent. cheaper than in the East.

The plant of the Braddock Wire Company, at Rankin Station, Pa., will close down on the 29th inst. for the purpose of making repairs. We are advised that the company have had under consideration for some time the advisability of erecting a small steel plant for the purpose of making their own steel. The question will probably be decided in the course of a few weeks.

On the 6th inst. the Freeman Wire Company, of St. Louis, filed notice of incorporation, the capital stock being \$750,000. The stockholders are John W. Harrison, John M. Harrison, David L. Field, C. S. Freeman, Thos. W. Freeman and Thomas Drennan.

Miscellaneous.

The Wayne Works, of Richmond, Ind., have recently been reorganized under the name of the Creamer & Scott Company, of which Thomas Creamer is president and Thomas D. Scott secretary and treasurer, with a paid-up capital stock of \$50,000. The company have removed their plant from Richmond to Indianapolis, where they have complete facilities for the manufacture of their specialties—namely, road-carts, stick-wagons, piano-box buggies, &c. The new works are located on the corner of Eighth street and Lake Erie and Western Railroad.

The McElroy Car Heating Company, of Detroit, and the Sewell Car Heating Company, of Portland, have amalgamated, with a capital of \$2,500,000. Robert C. Penger, of Albany, is president, and S. Hatch, of New York, is vice-president.

The following recent orders have been received at the Philadelphia Scale and Testing Machine Works of Riéhle Bros.: One 60-ton self-adjusting railroad-track scale for the Thomas Iron Company, Hokendauqua, Pa.; one 500-pound wire-tester for Blasius & Sons, Philadelphia; one 10-ton wagon-scale for Johnson Foundry, Johnstown, Pa.; two extra-heavy furnace charging scales for Tennessee Coal, Iron and Railroad Company, Chattanooga, Tenn.; one extra-heavy furnace charging scale for Woodstock Iron Company, Anniston, Ala.; one Weighmaster frame and standard, made to Turkish standard, for Algeria; United States standard weights for R. & A. Hecksher, Swedenland, Pa.

The Louisville and Nashville Railroad Company have just given out a contract for 500 refrigerator cars, 300 going to the Missouri Car and Foundry Company, of St. Louis, and 200 to the Ohio Falls Car Company, of Jeffersonville, Ind. The company have placed orders for their season's wants of spikes with the Tredegar Iron Works, for splice-bars with the Springfield Iron Works and for bolts with the Upson Nut Company. The company are double-tracking their short line to Cincinnati for a distance of about 30 miles and the main stem south for about 20 miles.

The people of Oxford, Chenango County, N. Y., are anxious to have a foundry established there, and set forth the numerous advantages presented by the locality.

PERSONAL.

Thomas W. Fitch, who has been superintendent of the Braddock Wire Company, Rankin Station, Pa., since their organization, has tendered his resignation, to take effect on July 1.

Henry Phipps, Jr., of the well-known firm of Carnegie, Phipps & Co., Limited, at Pittsburgh, has offered to erect an aquatic plant department to be located adjoining the greenhouses in the parks of Allegheny City. The offer has been accepted and work on the building will be commenced at an early date.

The Birmingham Rolling Mill Company, of Birmingham, Ala., held their annual meeting recently, electing the following officers: G. W. Norton, president; W. B. Caldwell, vice-president; B. du Pont, treasurer. Directors: John B. McFerren, W. W. Hite, W. P. Harney and J. G. Caldwell, all of Louisville, Ky. Thomas Ward is general manager of the mill, and John D. Dwyer is superintendent in charge of the mill departments.

Dexter Brackett, of Boston, was elected president of the New England Water-Works Association.

S. T. Wellman, formerly superintendent of the plant of the Otis Iron and Steel Company, at Cleveland, Ohio, has accepted the position of consulting engineer for the Illinois Steel Company, of Chicago, comprising the consolidated Chicago mills.

E. L. Harper, who wrecked the Fidelity Bank, of Cincinnati, is said to be directing a large iron business from his prison.

Thos. W. Wetherald, for a number of years manager of the nail factory of the Bellaire Nail Works, at Bellaire, Ohio, died at his residence in that place on the 17th inst. William Sharp has been appointed his successor.

The Master Mechanics' Association, whose sessions were held at Niagara Falls last week, elected officers as follows: President, R. H. Briggs, Memphis, Tenn.; first vice-president, John Mackenzie, Cleveland, Ohio; second vice-president, Albert Griggs, Providence; secretary, Angus Sinclair, New York; treasurer, O. Stewart, Charlestown, Mass.

J. K. Taggart, for a number of years superintendent of the coke plant of the Connellsville Coke and Iron Company, situated in the Connellsville region, has resigned his position to engage in the iron business with his father in Philadelphia. He has been succeeded by J. H. Paddock, chief engineer of the H. C. Frick Coke Company.

J. Adachi, an officer of the Japanese Government, who has been in this country three years under instruction, has attained conspicuous proficiency in engineering and geology and now returns home to make practical use of his knowledge.

Theodore Sturges, president of the Oxford Iron and Nail Company, sailed for Europe yesterday, to be absent until September. Samuel Sloan will act as president *pro tempore*.

The annual meeting of the stockholders of the Bethlehem Iron Company was held at Bethlehem, Pa., on Tuesday. The meeting was a large one, and nearly all stock was voted. The following board of directors was chosen: John Knecht, R. H. Sayre, Sr., Joseph Wharton, E. P. Wilbur, W. W. Thurston, R. P. Linderman and George H. Myers. Subsequently the new board organized, with the following officers: President, W. W. Thurston; vice-president, R. P. Linderman; treasurer, C. O. Brunner; secretary, Abraham S. Schropp. There has been no change made in the management of the works, all of the officers remaining the same.

The Iron Age

New York, Thursday, June 27, 1889.

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CHAS. KIRCHHOFF, JR., - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS - - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The Texas Trust Law.

In another part of this issue will be found the exact text of the law against trusts and combinations which is now in full force and effect in the State of Texas. This law has been alluded to in the daily press, and in some cases commented upon at length, but its provisions have very seldom been stated explicitly. With the law itself before them, our readers will be able to perceive to their own satisfaction how the Texas law-makers have proposed to deal with trusts. The question has undoubtedly been handled most vigorously and with a very earnest determination to settle it thoroughly and completely. The members of the Legislature realized that a gigantic evil was threatening the business interests of the State, and they proceeded, metaphorically speaking, to "pound the life out of it." For fear that the evil might not be recognized in some of the numerous shapes it had been known to assume, they first laid down a definition of a trust, which is so broad and sweeping that it includes all kinds of agreements covering manufacturing, transportation, selling or purchasing any article or commodity whatever. This definition is well worthy of careful study. It is an aggregation of the popular but often misinformed theories regarding trade associations. No trade association whatever can exist in Texas if the provisions of this definition are strictly applied. All such associations can be construed to affect the price, production or transportation of merchandise in some way, because they may "increase or reduce the price of merchandise or commodities," both of which they are forbidden to do by this act.

Corporations chartered by the State of Texas violating the provisions of the law forfeit their charters, and foreign corporations thus acting are prohibited from doing any business in the State. Principals, managers, directors, agents, servants or employees who carry out the purposes of trusts or combinations are punishable by a fine of \$50 to \$5000 and an imprisonment of one to ten years, each day in which the act is violated constituting a separate offense. Anything more sweeping than these clauses of the act could hardly be devised, and he would be a reckless man indeed who would subject himself to such penalties, if the law is really being carried out in its strict construction.

But the most remarkable feature of this law is the declaration as to the evidence required to prove the existence of a combination or trust. "The character of the trust or combination alleged may be established by proof of its general reputation as such." It is not necessary to prove or produce any article of agreement or any written instrument, "or that it was evi-

denced by any written instrument at all." This would cover even such cases as the Steel Rail Association, which everybody in the trade knows has no control whatever over prices, but concerning which there is a popular belief in outside circles that it is a full-fledged combination. Agents for steel-rail manufacturers and for manufacturers of iron and steel in numerous other forms have need to exercise much caution in making sales in Texas, as they are all popularly believed to be members of trade organizations of some kind, and such belief is sufficient evidence to lead to conviction by Texas juries. The manufacturers themselves, though they may never visit the State, are equally liable to punishment with their agents, the object of the act "being to reach and punish all persons offending against its provisions, whether within or without the State." But this view of the law carries with it so many palpable absurdities that it seems almost unreasonable to suppose that attempts will be made to enforce the penalties prescribed.

While contracts or agreements made in violation of this act are pronounced by it "void and not enforceable," a singular oversight on the part of its framers is to be observed. No penalties are specified against those who purchase commodities from the trusts or combinations. A stringent, hit-all-around measure like this should have taken cognizance of the misguided people who will insist on patronizing concerns bound together by compact "to increase or reduce the price" of merchandise. Such people are equally at fault with the sellers, and a provision should have been specially incorporated in the law for their punishment.

A peculiarity of the law is its non-application to the farmer. One section specifically declares that "the provisions of this act shall not apply to agricultural products or live-stock while in the hands of the producer or raiser." Farmers are free to combine and refuse to take less than a certain price for wheat, corn, cotton, hogs, milk, &c., and if they do so they are held blameless. But woe betide the wheat, corn or cotton merchant, the pork-packer or the milk vender who effects an understanding with others in his line of trade to sell at a certain price! For every day during which such an understanding prevails he is liable to a fine of \$50 to \$5000 and an imprisonment of one to ten years. This seems to be such a flagrant discrimination between occupations as to bring the constitutionality of the act in serious question. At all events, it arrays the agricultural interests against all the other industrial interests of the State, combining with the latter the commercial and transportation interests.

The appearance of the Texas law at this juncture forms a most interesting chapter in the history of the trust and combination era which is now on us. It represents very forcibly the dominant sentiment in a large section of the country that the farming interest is at the mercy of the commercial, manufacturing and railroad interests, and that a remedy for this state of affairs must be found. But it is a striking display of crude legislation; its very wide application, threatening severity and most forbidding harshness being well calculated to defeat the very objects for which it was framed.

Northwest Freight Rates.

The week has been an exciting one in railroad matters. The rate situation in the Northwest is one which has great interest for merchants in the East, in Chicago and in the territory named. In spite of the great increase in local manufacturing, a large part of the articles used in the Northwest comes from the States east of Chicago. If the freight rates to St. Paul are all made up by adding the Chicago local to the rate from the factory or sea-board to Chicago, and if the through rates by any route conform to this standard, then all jobbers, those in Chicago included, can sell in Dakota and Minnesota on even terms. This has been the theory on which tariffs have for years been made up, so that it seems a pity that anything should occur to throw so nicely an adjusted balance into confusion. But freight rates, like channels of trade, find at last ways of breaking bounds and yielding to natural laws. As the presence of ore and coal determines the successful furnace, so cheap water routes must fix the basis for freight tariffs.

In the beginning of the season the lake rate first class from New York to St. Paul was fixed at 89 cents, while to Chicago it was 51 cents on traffic for St. Paul. This left the roads north of Chicago an opportunity to secure St. Paul traffic at a rate of 38 cents. This they were glad to do. Since to cut these Chicago roads off from all the flour down and merchandise up was no part of the programme, the owners of the Lake Superior boats were easily induced to make this higher rate from New York to St. Paul or Duluth than to Chicago, thus leaving the margin spoken of north from Chicago. This higher rate to St. Paul than to Chicago also allowed the Chicago jobbers to sell the Northern trade as usual. There was one defect at least in this plan. By water Duluth is as near to Buffalo as Chicago is, and although the amount of traffic on the upper lakes is not so great as on Lake Michigan, yet an increase in the rates much less than 35 cents per cwt. would have served to balance this lighter trade so as to have allowed the Superior boats an equal profit. Thirty-five cents per 100 was, however, the difference agreed upon on first class, because of the trouble to the Chicago-St. Paul roads if any less amount of difference was made.

Geographical considerations asserted themselves and the claims of St. Paul and Minneapolis for tariffs fixed on water distances from the sea-board were made. One road said that the rates to St. Paul should be fixed on a fair profit to the carriers without regard to the Chicago lines at all. This road figured this at 69 cents, and the lines which had early in the season named 89 cents now offered 54 cents in a spirit of protest against any offer under their original figures. Meanwhile the Chicago roads were getting roundly denounced by the jobbers of that city because the locals were so much higher than the proportion of the through. This was getting to be a serious matter; for if St. Paul should by any means get an independent tariff by any route, the effect in time would be a loss to Chicago of nearly all the jobbing trade of that important section. It may be that the end of the present war will be the restoration of the old high rates, but if so the con-

ditions of the case are such that it seems hardly possible that those high rates will be permanent.

If we understand the matter, it seems only a question of time when St. Paul, by its water transportation, will have tariffs to and from the sea-board as low or nearly as low as those ruling east of Chicago. This would mean trouble for the jobbers of Chicago, and as far as they are concerned is to be regretted. But what is a loss to Chicago would be a gain to St. Paul, Minneapolis and the whole Northwest. But Chicago will not easily let the trade of the Northwest go if she can help it. The roads can rely upon it that every means will be tried, every legal point taken which will avoid such a loss. And some way may yet be devised by which the difficulties will be smoothed over and the old tariff basis be retained.

Our Increased Domestic Export to Australia.

The Australian colonies have imported unusually large amounts of foreign merchandise of late years, considerably in excess of their exports, and it is gratifying to note that the United States has had a goodly share in the increase. Following are the latest official statistics showing the foreign trade of those colonies, taking two years together and comparing them with the previous equal period:

Import and Export in 1885 and 1886.

	Import.	Export.	Excess of import.
Victoria...	\$36,575,179	\$27,947,079	\$8,628,100
New South Wales...	44,338,744	32,007,958	12,240,786
Queensland...	12,525,717	10,177,374	2,348,343
South Australia...	10,401,153	10,125,263	275,890
West Australia...	1,408,804	1,077,035	331,769
Tasmania...	3,514,053	2,645,233	868,820
New Zealand...	14,238,934	13,492,730	746,204
Totals...	\$123,001,584	\$96,962,672	\$26,038,912

Import and Export in 1887 and 1888.

	Import.	Export.	Excess of import.
Victoria...	\$42,994,285	\$25,204,908	\$17,789,377
New South Wales...	30,691,793	30,356,632	335,161
Queensland...	12,385,748	11,678,325	707,423
West Australia...	1,332,690	1,300,310	32,380
Tasmania...	3,207,480	2,783,236	424,244
			\$19,379,585
South Australia...	10,509,911	12,314,878	1,804,967*
New Zealand...	12,137,415	14,633,494	2,496,079*
Totals...	\$122,250,322	\$107,180,783	\$15,069,539
Net excess of import...			\$15,078,739

*Excess of export.

The excess of import, which, for example, in Victoria was very large in 1887 and 1888, has, of course, chiefly arisen from the rapid extension of railroads and telegraphs. On January 1, 1887, 8881 miles of railway were in running order and 1992 miles building; the telegraphs measured in length at the same date 37,099 miles of line, with 71,859 miles of wire, there being 1921 officers and 9,021,610 telegrams forwarded in 1886. Simultaneously the mail department handled in 5236 offices 150,435,626 letters and postal cards and 82,363,194 newspapers. American trade presents the following figures:

Calendar year.	Import into the United States.	Domestic exports to Australasia.
1886...	\$4,808,232	\$12,008,701
1887...	4,613,218	9,442,150
Increase...	\$285,014	\$3,166,551

The increase of exportation in a single year has been 33 per cent., and this in the face of the comparatively small amount of

goods we import from Australasia. The ports of New York, Boston and Philadelphia received during the fiscal year ended June 30, 1888, only 15,738,510 pounds of Australian clothing wool—and of these only 5,046,245 pounds direct—out of a total import of 111,982,093 pounds. What little we consume of Australian tin for the most part reaches us via London. Our goods, whether they be hardware or manufactures of wood and leather, including carriages, have fortunately been gaining in popularity in Australia year after year, and the remarkable increase in the amount taken in 1888 abundantly proves that this trade, properly conducted, is capable of as great expansion as to any other non-European country, small as the population is, for it barely reaches 4,000,000 at present. What has astonished the world most is this very circumstance of a comparatively small population being able to produce such enormous amounts of goods and taking in return even greater amounts. The only way to explain it is that the Australasians are very active and enterprising; that what they produce is very valuable, as, for example, wool and the metals; that their resources are great and manifold and their methods of production the best suited to the locality; and finally that at least in the cities modern civilization is carried to as high a degree of refinement and rests on as solid a basis as anywhere in the United States or Europe. They have long learned to buy the best even if it be a little dearer.

There is only one serious drawback in Australia so far as wool and cereal production are concerned—namely, the frequent prolonged droughts, leading at times to a fearful degree of mortality among sheep, and this explains the fluctuating amounts of wool yearly turned out. But, on the whole, production of the latter has been steadily on the increase, and in 1886 Australasia exported 478,998,992 pounds, toward which New Zealand contributed 90,853,744 pounds, the amounts leaving the latter colony having been as follows during 1883–87:

Year.	Pounds.	
1883.....	68,149,430	\$3,014,211
1884.....	81,139,028	3,267,527
1885.....	80,507,431	3,205,275
1886.....	90,853,744	3,672,971
1887.....	83,125,382	3,221,074

The number of sheep was as follows:

Year.	Number of sheep.	Year.	Number of sheep.
1883.....	13,306,329	1886.....	14,774,360
1884.....	13,978,520	1887.....	15,155,636
1885.....	14,546,801		

The average production of wool per sheep in all 1886 throughout Australia was 4½ pounds. The rise in wool three years ago, since maintained, has, of course, contributed greatly toward improving Australian affairs and finances, 1d per pound making a difference of \$10,000,000 per annum. The exportation to England of wheat and mutton, the latter in refrigerator steamers, is at times important, although in the latter item the Argentines are becoming competitors not to be despised. New Zealand exports to the United States many cargoes of Rauri gum annually, a fossil rosin used for varnish manufacture, supposed to be a very profitable trade. Australia is, from a commercial point of view, one of the most promising countries we deal with. It is reported per cable from Sydney, June 21, that the New South Wales Government have decided to continue for a year from next November the contract for carrying

the mails between that port and San Francisco. This is important at a time when, as we have shown, the Australian trade we are carrying on is taking a fresh start.

British Statistics for 1888.

The annual statistical report of J. S. Jeans, secretary of the British Iron Trade Association, has just been received. It contains a mass of valuable statistics relative to the British iron trade, as well as much information concerning the iron trade of other countries, the whole comprising a volume of 128 pages. An epitome of the British statistics of production, exports and imports is given in the following table, in which the figures for 1888 are compared with those for 1887:

Description.	1888.	1887.
Production:	Tons.	Tons.
Total pig-iron.....	7,898,634	7,441,927
Bessemer pig-iron.....	3,245,555	3,064,873
Basic pig-iron.....	475,540	471,510
Spiegeleisen and ferro..	305,134	233,190
Puddled bar.....	2,031,473	1,701,312
Bessemer steel ingots....	2,012,794	2,064,403
Bessemer steel rails....	979,083	1,021,847
Basic steel.....	408,594	364,526
Open-hearth steel ingots	1,292,742	981,104
Iron ore.....	14,166,000	13,088,041
Coal.....	169,935,219	162,119,812
Stocks pig-iron Dec. 31..	2,588,708	2,778,684
Ship-building tonnage launched.....	904,329	577,327
Exports:		
Total iron and steel....	3,966,984	4,146,907
Pig-iron.....	1,036,177	1,159,500
Railroad iron and steel..	1,020,264	1,012,681
Tin-plates.....	301,291	354,773
Coal.....	26,963,462	24,454,607
Imports:		
Iron ore.....	3,562,071	3,765,788
Beams, &c.....	69,313	59,206
Bars, angles, &c.....	113,362	112,879
Steel, unwrought.....	12,058	14,727
Unenumerated iron, &c..	157,790	129,830

These figures show how satisfactory was the business of 1888 as compared with 1887. In nearly every instance the figures of production show an increase, which is in some cases very heavy, while the branches in which there was no increase have been holding their own very well. The export trade has also been sustained very satisfactorily. Stocks of pig-iron decreased to some extent during the year.

The most remarkable increase in production shown in this table was in open-hearth steel, which is mainly due to the larger employment of steel in ship-building, although no inconsiderable part of the enlarged output was worked into tin-plates. The increased production of pig-iron is not so notable, as Great Britain surpassed the figures for 1888 in that line in both 1882 and 1883 by 600,000 tons. Never before was the production of open-hearth steel so large, the output of 1886 having been almost doubled, while there was a gain of nearly one-third on the figures for 1887. The only statistics available regarding tin-plates are those relating to exports, as the makers seem to withhold their figures of production. With reference to this branch of trade, Secretary Jeans says: "The position and prospects of the industry at the present time are very uncertain. There is a probability of a year of good trade, and the quantity produced is increasing, but much will depend upon how far the movement which is in progress in the United States for the establishment of a home tin-plate industry is successful." Of the total British exports of tin-plates, no less than five-sevenths are sent to this country.

For the purpose of comparison with this country we present below the leading statistics of iron and steel production in the United States in 1888 and 1887:

	1888.	1887.
	Gross tons.	Gross tons.
Pig-iron.....	6,489,738	6,417,148
Bessemer steel ingots.....	2,511,161	2,936,033
O. H. steel ingots.....	314,318	322,069
Bessemer steel rails.....	1,386,277	2,101,904
All forms rolled iron.....	2,153,263	2,311,161

Manufacturing in Canada.

Stimulated by favorable legislation and favored by long credits, which the plethoric condition of the banks enabled them to extend, through the floating abroad of Government loans, manufacturing establishments in Canada seem to have been multiplied far beyond the demands for consumption. This is true of manufacturers of cotton, agricultural machinery, flour, sugar and some other lines, until this year it is true that only the strongest survive. Numerous facts touching this subject are given in the recent reports of bank managers just issued, in which discussion respecting the general interests of the Dominion is given a wide range. For example, Henry Yates, manager of the Merchants' Bank of Canada, says:

We have largely increased the productive power of our manufactories of textiles, and apparently have outbuilt the requirements of the country. Manufacturers have found an outlet by shipping large quantities of cotton goods to China, realizing no profit from the venture so far, but giving employment to workmen, keeping looms running and factories open. This, after all, is no unusual condition of things in manufacturing. . . . It does, however, teach us that if we build factories we must submit to the conditions under which factories are run, and take bad times and good times together. And we may certainly conclude that when times are good dividends should be moderate, and money set aside for a rainy day. And it teaches further that when a country has factories enough it is folly to build more. When our population is double what it is at present, or even half as much again, we can then enlarge our looms and spindles with some reason. No matter what kind of manufacture a man is engaged in, whether the raw material be cotton, wool, iron or leather, these remarks are pertinent to it. No money can, as a rule, be made out of mere staples or out of articles that everybody can make and that everybody understands. Any manufactory or mill that is built without close calculation and is carried on in a humdrum, careless manner will undoubtedly drift into loss.

To the same effect is the report of Manager Walker, of the Canadian Bank of Commerce, in reference to the manufacture of agricultural implements. Of harvesting machinery the output during the present season will be probably 10 to 15 per cent. in excess of last year, but at reduced profits, owing to the competition of large and perfectly-equipped establishments. Within four years prices have fallen, say, 20 per cent., and at the present time only 15 establishments survive of the 22 formerly in existence. Of the successful ones, moreover, four manufacture three-fourths of the entire product. In hardware, groceries, &c., the same general statements hold true. The margin of profits is growing smaller, the expenses of conducting business greater, and as a consequence the tendency is in the direction of the large firms, whose proportion of expenses to sales can be kept within reasonable limits, gradually absorbing the trade.

In other words, the leading lines of general business in Canada seem to have been overdone, with the inevitable consequence

of many bad debts, and thus it comes about that Canadian manufacturing interests, which have been so enormously developed of late, realized during the past year a poor return on their capital. A part of the difficulty is attributed to the impolicy of granting long credits by banking institutions, and bank managers are unanimous in suggesting a gradual change in this respect. It should be observed, however, that in contemplating the future a more hopeful feeling is expressed, the general situation being improved by the weeding out of weak traders, as well as by sounder methods that follow where the evils of expansion have been felt. Moreover, the lumbering industry is active and profitable and crop prospects are excellent.

OBITUARY.

SILAS H. WITHERBEE.

Silas H. Witherbee, of the well-known iron-ore firm of Witherbees, Sherman & Co., died of pneumonia at his home in New York, on Saturday, June 8, at the age of 74 years. He had been seriously ill for several days, but his death was unexpected. We take the following statements concerning his life and achievements from a biographical sketch furnished the *Engineering and Mining Journal* by William Allen Smith:

Mr. Witherbee was born in Bridport, Vt., January 27, 1815. Losing his father when he was only five years old, he early became self-reliant. As a boy he showed the same kind heart and genial temperament which marked his later life; he excelled in feats of skill and strength, and was a noted wrestler. He had no schooling after the age of 13, at which time he left home and lived with a brother in Vermont. When 19 years old he went to Port Henry, on Lake Champlain, then almost in the wilderness, and became a store clerk with a salary of \$50 per year and board. Later he was a clerk at the blast-furnace at Port Henry, then owned by Horace Gray, of Boston. This was the opening of his career in the iron business. While here he was married in 1842 to Sophia C. Goff, the sister of the superintendent, George W. Goff. About 1846 he went to Westport, where he became superintendent of the furnace, under the management of Frank Jackson, of Boston. In 1848 he returned to Port Henry, and formed a partnership with his nephew, Jonathan G. Witherbee. This firm of S. H. & J. G. Witherbee did a large business in transporting ore, iron and other products from Lake Champlain to New York. In 1849 the firm acquired from A. G. Rousseau, of Troy, an interest in the iron-ore property adjoining the ore property of John A. Lee and George Sherman, known as the "Old Bed." In 1852 they joined with Kinsley Sherman in establishing the firm of Sherman & Witherbee, at Cleveland, for the sale of the ore in the West; and for many years before the large development of the Lake Superior mines this firm supplied the Western market with the only iron ore brought to mix with local ores. The iron-ore interests of John A. Lee, Geo. Sherman and S. H. & J. G. Witherbee were consolidated in 1856 under the firm name of Lee, Sherman & Witherbee; in 1861 the firm of Witherbees, Sherman & Co. was established, the other three partners buying out the interest of Mr. Lee. The firm have continued to the present time under the same title and rank among the largest ore producers of the country.

In 1863 the Witherbees with F. P. Fletcher erected a charcoal blast-furnace near Mineville (the name given by them

to the town which grew up around their ore beds) and from "New Bed" ore produced some of the first Bessemer pig-iron made in this country. In 1864 the firm acquired an interest in the adjoining property of the Port Henry Iron Ore Company. From that time the two concerns have been closely associated, with Witherbees, Sherman & Co. as sales agents. Their sales of ore have in some years reached nearly 500,000 tons. Mr. Witherbee was the first president of the Cedar Point Iron Company, whose furnace, built in 1873, was subsequently purchased by Witherbees, Sherman & Co., and was the first in the country to use Whitwell's hot-blast stoves.

In 1879 Mr. Witherbee was a director in the Bay State Iron Company, at Port Henry, and upon its later reorganization became president of the same furnace company with which he had started years before as clerk. At the time of Mr. Witherbee's death he was the senior member of the firm of Witherbees, Sherman & Co., vice-president of the Port Henry Iron Ore Company, vice-president of the First National Bank of Port Henry, president of the Port Henry Furnace Company, director of the Lake Champlain and Moriah Railroad Company and of several other corporations in different parts of the country. The business life of Mr. Witherbee was characterized from beginning to end by energy, sagacity and fidelity. Starting as an industrious and faithful subordinate, he advanced gradually and surely to a position of honored leadership. The nature and extent of his business made him among the best-known of our iron men. He was, in the best sense, a self-made man, but conspicuously free from egotism or ostentation. Through his whole life he preserved a winning simplicity of manner, which, with his kindly shrewdness, gave him the faculty of attaching warmly to himself all who had near relations to him. His patience and large charity were well known, and his naturally even temper was hardly ever disturbed. Mr. Witherbee's family life was singularly happy. The wife of his youth survives him, and he leaves three children, two daughters and one son, Walter C., a member of his firm, residing at Port Henry.

JAMES S. MARSH.

James S. Marsh died on June 16 at his residence, in Philadelphia, in the 68th year of his age. Mr. Marsh was born in Cayuga County, N. Y., November 11, 1821. When 20 years of age he removed to Lewisburg, Pa., where he introduced the manufacture of cooking stoves, being one of the first to engage in that business in Pennsylvania. There he established the Lewisburg Foundry. In 1851 Mr. Marsh became one of the firm of Beaver, Marsh & Co., manufacturers of pig-iron, at Winfield, Union County. Later he became interested in the manufacture of agricultural implements and was the original patentee of the revolving self-raking reaping machine. Mr. Marsh continued in that business until 1878, when his works were destroyed by fire, since which time he had not been engaged in any business. He leaves six sons and one daughter, all adults.

WILLIAM H. SCRANTON.

William H. Scranton, for many years general manager of the Oxford Iron and Nail Company, of Oxford, N. J., died on the 19th inst. from heart failure, having been taken ill with pneumonia three days before. He was general manager of the Fall River Iron Works up to the time of the sale of their plant, and then became interested in the Wenstrom ore-separator, with Robert A. Cook. He was but 49 years old at the time of his death.

The Homestead Wages Scale.

In our issue of May 23 we made mention of the fact that Carnegie, Phipps & Co., Limited, of Pittsburgh, had decided to put in operation at their Homestead Steel Works a sliding scale of wages, to go into effect on the 1st day of July. In the early part of this month William Weihe, the president of the Amalgamated Association, requested that the firm furnish him a copy of the proposed scale, which was done. A portion of this scale was printed in the *National Labor Tribune*, and also circulated among the delegates in attendance at the Convention of the Amalgamated Association of Iron and Steel Workers. This led W. L. Abbott, chairman of Carnegie, Phipps & Co., Limited, on the 12th inst., to address a letter to Mr. Weihe, which we publish in part as follows:

"DEAR SIR: When, on Tuesday last, you asked for and were given a copy of the scale of wages submitted to our employees of the Homestead Steel Works, you were told that the same caused an average reduction in the rates at present paid of, approximately, 20 to 25 per cent. It was explained to you that the greater part of this cut was taken from the wages of those men whose earnings are abnormally high under existing Amalgamated rates, made so in part by reason of the exceptional facilities we possess and the special character of the product of the Homestead Works. My attention has to-day been called to the fact that the men at Homestead are circulating printed copies of the scale that was given you. In a parallel column is published the present tonnage rates, but the estimated tonnage of each turn contained in our copy has been omitted from that the men have had printed. A perfectly correct understanding of our proposition is impossible if all features of the scheme are not exhibited. Permit me to submit some figures for your consideration. They show the wages that would have been earned under the new scale, based upon the actual output of the Homestead Steel Works for the month of May, 1889:

Converting Mill.

Position.	Number of men.	Rate per 100 tons.	Daily earnings as estimated on basis of May tonnage.	Earnings for May of each man.	Actual daily earnings, basis of May tonnage.
Cupola man.....	1	\$1.70	\$3.75	\$126.00	\$5.04
Vessel man.....	1	1.70	3.75	126.00	5.04
Pourer.....	1	1.50	3.50	117.80	4.71
Blower.....	1	1.48	3.25	109.65	4.39
Speigel man.....	1	1.36	3.00	100.75	4.03
Pit men.....	10	1.36	3.00	100.75	4.03
Stopper-setter.....	1	1.25	2.75	92.60	3.70
Ladle man.....	1	1.18	2.50	87.40	3.49
Cupola helpers.....	2	1.14	2.50	84.45	3.38
Bottom-makers.....	1	1.14	2.50	84.45	3.38
First regulator.....	1	1.00	2.40	80.75	3.23
Crane shifters.....	3	1.00	2.40	80.75	3.23
Vessel man's first helper.....	1	1.00	2.40	80.75	3.23
Cinder men.....	3	1.00	2.40	80.75	3.23
Vessel man's second helper.....	1	1.02	2.25	75.55	3.02
Bot.-m'k'r's helpers.....	2	1.00	2.20	74.10	2.96
Mold-sanders.....	2	1.00	2.20	74.10	2.96
Cinder tapper.....	1	.95	2.10	70.40	2.81
Rack man.....	1	.95	2.10	70.40	2.81
Iron-crane man.....	1	.95	2.10	70.40	2.81
Ingot-extractor.....	1	.95	2.10	70.40	2.81
Stopper-maker.....	1	.95	2.10	70.40	2.81
Metal-wheelers.....	8	.91	2.00	67.40	2.70
Cinder-snappers.....	2	.91	2.00	67.40	2.70
Ladle man's helper.....	1	.91	2.00	67.40	2.70
Ingot-extractor's helper.....	1	.91	2.00	67.40	2.70
Coke-wheelers.....	2	.86	1.90	63.70	2.55
Second regulators.....	3	.86	1.90	63.70	2.55
Mold washer.....	1	.86	1.90	63.70	2.55
Steel-crane man.....	1	.86	1.90	63.70	2.55

Total tonnage, 14,818 tons; tonnage per turn, 7400 tons.

28-inch Blooming Mill.

Screw man.....	1	\$3.10	\$6.00	\$150.00	\$6.00
Heater.....	1	3.10	4.50	118.00	4.72
Rougher.....	1	2.50	3.75	98.50	3.94
Point-in-book.....	1	1.90	2.75	72.25	2.89
Shear man.....	1	1.90	2.75	72.25	2.89
Turn-up-book.....	1	1.90	2.75	72.25	2.89
Bottom men.....	2	1.79	2.60	68.10	2.72
Hookers.....	3	1.72	2.50	65.40	2.62
Furnace men.....	6	1.55	2.25	58.95	2.36
Tong man.....	1	1.55	2.25	58.95	2.36
Shear man's help.....	1	1.52	2.20	57.80	2.31
Dragout.....	1	1.52	2.20	57.80	2.31
Butt-wheeler.....	1	1.38	2.00	52.50	2.10
Pull-around.....	1	1.38	2.00	52.50	2.10
Shear pulpit.....	1	1.21	1.75	46.00	1.84
Pulpit man.....	1	1.21	1.75	46.00	1.84
Cover men.....	2	1.14	1.65	43.35	1.73

Total tonnage, 7808 tons; tonnage per turn, 3804 tons.

23-Inch Mill.

Roller.....	1	\$6.92	\$4.50	\$90.25	\$3.57
Heater.....	3	5.77	3.75	74.43	2.98
Catcher.....	1	5.38	3.50	69.40	2.78
Rougher-down.....	1	4.62	3.00	54.60	2.38
Rougher-up.....	1	4.23	2.75	54.60	2.18
Sticker-in.....	1	4.23	2.75	54.60	2.18
Straitener.....	1	4.00	2.60	51.60	2.06
Heater's first helpers.....	3	5.60	2.40	47.60	1.90
Hookers.....	6	3.46	2.25	44.60	1.78
Hot-straighteners.....	2	3.46	2.25	44.60	1.78
Buggy man.....	1	3.23	2.10	41.65	1.67
Heater's second helpers.....	3	3.23	2.10	41.65	1.67
Chargers and drawers.....	8	3.23	2.10	41.65	1.67

Day turn, 1290 tons.
In addition to the above, wages of 13 men, making \$14.50, changing rolls, which is not included in earnings.

* \$1 per month and 3 1-10.

33-Inch Beam Mill.

Roller.....	1	\$11.00	\$5.80	\$166.30	\$6.65
Heaters.....	3	8.89	4.00	147.40	5.90
Catcher.....	1	7.78	3.50	129.00	5.16
Rougher-down.....	1	7.22	3.25	119.70	4.79
Rougher-up.....	2	6.67	3.00	110.00	4.42
Straighteners.....	4	6.11	2.75	101.30	4.05
Hookers (front).....	1	6.11	2.75	101.30	4.05
Sticker-in.....	3	5.78	2.60	95.80	3.83
Heater's 1st helpers.....	4	5.55	2.50	92.00	3.68
Chargers.....	3	5.55	2.50	92.00	3.68
Hookers (back).....	1	5.00	2.25	82.90	3.31
Buggy man.....	3	4.67	2.10	77.40	3.09
Heater's 2d helpers.....	1	4.67	2.10	77.40	3.09
Buggy man's helper.....	4	4.67	2.10	77.40	3.09
Hot-bed men.....	1	4.67	2.10	77.40	3.09
Saw man.....	2	4.44	2.00	73.60	2.94
Rack man.....	12	4.44	2.00	73.60	2.94
Straightener's helpers.....	1	3.78	1.70	62.65	2.50
Hydraulic telegraph.....	1	3.78	1.70	62.65	2.50

Total tonnage, 3317 tons; tonnage, one turn, 1658 tons.
* \$100 per month and \$4.

119-Inch Plate Mill.

Rollers.....	1	\$6.93	\$5.00	\$181.50	\$7.26
Screw man.....	1	8.04	5.00	145.65	5.83
Shear man.....	1	8.04	4.50	131.10	5.24
Table man.....	1	8.04	4.50	131.10	5.24
Heaters.....	2	5.80	3.25	94.60	3.78
Second shear man.....	1	5.36	3.00	87.40	3.50
Hookers.....	2	4.64	2.60	75.70	3.03
Heater's helpers.....	4	4.02	2.25	65.60	2.62
Sweepers.....	1	4.02	2.25	65.60	2.62
First leader.....	1	3.93	2.20	64.10	2.56
Second leader.....	10	3.75	2.10	61.20	2.45
Shear man's helpers.....	1	5.36	3.00	87.40	3.50
Crane man.....	1	4.02	2.25	65.60	2.62
Crane man's helpers.....	1	4.02	2.25	65.60	2.62

Product on each turn, 1631.

* \$100 per month and \$5.

"It will be noted that the estimated product per turn was in many instances exceeded, while in others, the 23-inch mill, for instance, the reverse is the case. It is due to ourselves and to our workmen that our position and our aim in the action that has been taken be clearly defined. As the official head of a great and influential organization, to which so many of these men acknowledge allegiance, I briefly summarize the statement made to you orally:

"1. The Homestead Steel Works cannot longer be operated successfully under a scale of wages established to apply to iron products, nor under conditions that have radically changed, and which did not contemplate the use of appliances and methods admitting of a largely-increased output without corresponding increase of labor. These improved facilities were acquired only through the outlay of large sums of money, on which capital we must have a reasonable return.

"2. To place ourselves upon an equality with our leading competitors an average

reduction of wages of, approximately, 25 per cent. is imperative.

"3. As a cure for the annual recurrence of wrangles and the dissatisfaction inevitably following the yearly agitation of the wage question, and in the interest of our men quite as much as of ourselves, a sliding scale shall be established.

"4. The scale adopted shall be operative for not less than two and one-half years.

"This action is not taken in antagonism to organized labor, but it has been forced upon us by the unreasonable and shortsighted demands of that power which, like all power not carefully controlled, is apt to be used to destroy itself. We recognize the right of every man to get for his services the highest market price. Whether, as employers, we purchase such service from the individual or from an organization which controls him is immaterial to us."

During last week several conferences were held between the firm and a committee from the Amalgamated Association, but no settlement was reached. The first conference was held on Wednesday, the 19th inst., and before any business was done the Amalgamated committee was given to understand that there were three essentials that would be insisted on by the firm: First, a reduction and a material one; second, a sliding scale; third, that whatever agreement should be reached it was to continue in force at least two and one-half years. The workers did not make any serious objection to the second question, the only objection being that they did not understand its workings and were in doubt as to its effect. They objected to the base of the scale, the firm demanding \$25 and the Amalgamated Association asking for \$27.50. The firm stated that they were willing to leave it to one man to establish the average selling price and they would allow the Amalgamated Association to name the man, only providing that he be a strictly honest man. They named President Weihe, Secretary Martin and Vice-President Roberts. Another conference was to have been held on Thursday, the 20th inst., but for some reason the Amalgamated committee did not put in an appearance and thus the matter stands. From present indications a strike is inevitable unless a settlement is reached during the present week. The entire plant of the firm will close down on the 29th inst., for the purpose of making the annual repairs. If a full complement of men can be secured the plant will be put in operation as soon as repairs are completed; if not it will remain idle until men are secured.

At a meeting of the Pittsburgh Committee of freight agents of the railroads running east of Pittsburgh, held in that city on the 22d inst., it was decided to make a reduction in the rates on iron and steel of about 3 cents per 100 pounds. The reduction was made to agree with the reduced rates put in force by the railroads from the Mahoning and Shenango valleys. The new figures go into effect on the 27th inst. and are as follows, the first named for carload lots and the last for freight in less quantities, in cents: To New York, 12 and 15; Boston, 15 and 18; Albany, 12 and 15; Utica, 12 and 15; Syracuse and Rochester, 10 and 13; Philadelphia, 10 and 13; Baltimore, 9 and 12; Washington, D. C., 9 and 12; Richmond and Norfolk, Va., 12 and 15; Portland, Maine, 19 and 22½.

Several large bridge contracts have been awarded by the Pennsylvania Railroad Company—viz., the Lewiston Bridge across the Juniata to M. P. Roberts; the Granville Bridge to the New Jersey Steel and Iron Company; May's Bridge and the Manayunk Bridge to Crofode & Saylor. The new South Fork and Conemaugh bridges will be of stone.

TRADE REPORT.

Chicago.

Office of *The Iron Age*, 50 Dearborn street,
CHICAGO, June 24, 1889.

Pig-Iron.—The syndicate of Malleable Iron manufacturers placed their order for the year's supply of Charcoal Iron last week. This is about the largest contract that is placed every year and many individual buyers never place their order for Charcoal Iron until that purchase is made. The sale was well spread out among buyers and brought out quite an active demand for this class of Iron from all sections of the West. Manufacturers of Malleables seldom contract until late in July or August, but the recent heavy purchases of Coke Iron, which firmed up the price, and the better prospects in all lines of Iron manufacture, induced them to buy earlier this year. The statement made three months ago that Charcoal would be short is again revived and to some benefit in getting orders. The furnaces that were out of blast are not taking orders at present prices because they say later, when the shortage is realized, they will have their Charcoal to make higher-priced and more profitable Iron. It matters not how much truth there is in the Charcoal shortage statement, it has had and is having its effect upon the consumers of Iron and making buyers who usually buy small lots take larger quantities. In local Coke Irons trade was very good, but nearly all the largest buyers have contracted. Ohio and Southern furnaces worked hard to sell Soft Irons and found a good many orders which they could accept under the advantage of the \$3.65 freight rate. On Lake Superior Charcoal, cash, f.o.b. Chicago, we reduce quotations 50¢ per ton, and give \$18 as the bottom price by the cheapest sellers on carloads. There are but two or three standard Irons that can be bought at these figures; other makers refuse orders at less than \$18.50 @ \$19. The balance of the changes are made on account of the reduction in freight rates from the South. We quote Local Coke, No. 1, \$15.50; No. 2, \$14.50; No. 3, \$13.50; Chicago and Bay View Scotch, \$15.50 @ \$16; American Scotch (Blackband), \$17.50; Southern Coke, No. 1 Foundry, \$15.50; No. 2, \$15; No. 3, \$14; No. 1 Soft, \$14.75; No. 2, \$14.25; Gray Forge, \$13.25; Mottled, \$13; Hanging Rock, No. 1, \$18; Jackson County, No. 1, \$17.50, immediate delivery; Southern Ohio Silvery, No. 1, \$17; No. 2, \$16; Tennessee Charcoal, No. 1, \$17.75; Alabama Car-Wheel, \$24 @ \$25.

Bar-Iron.—In lots ranging from 25 to 50 tons business was quite active. Merchants and manufacturers were disposed to fill up broken stocks, and wanted shipments before the close of the month. For these orders mills were enabled to get better figures than prevailed several weeks ago. Mills that accept orders for delivery later in the season do not appear quite so firm as last week. Makers' prices range from \$1.55 to \$1.60, half extras, f.o.b. Chicago, on Common, and on Single Refined, \$1.75. On Car specifications \$1.60, flat, is asked. On account of freight reductions these figures net the manufacturer better margins at mill. Store quotations are \$1.65 on Common, \$1.80 on Single Refined and \$1.90 for better grades in small lots full card.

Structural Iron.—Actual business is gradually improving. Each week some long-talked-of building project matures and new ones are started. The Beams (about 150 tons) for the foundation of the Rand & McNally building were let to Carnegie

last week. Other orders of a similar nature are pending. As foundries get in work prices improve, and competition is more generous. The quick demand for stock shapes has depleted the supply, and mills are beginning to hear some vigorous calls on unfilled contracts. Quotations are as follows, f.o.b. Chicago: Angles, 2.10¢ @ 2.12½¢; Universal Plates, 2.15¢; Sheared Plates, 2.20¢; Tees, 2.55¢; Beams and Channels, 2.90¢. Small lots from store: Angles, 2.20¢ @ 2.30¢; Tees 2.65¢ @ 2.70¢; Beams, 3.40¢

Plates, Tubes, &c.—Buyers continue to take only small lots, which keeps sellers pretty busy, but does not make much inroad on the large stocks they have on hand. A good many inquiries have been made lately for round lots Iron and Steel Plates for July and later delivery. Quotations from store are as follows: Nos. 10 to 14 Iron Sheets, 2.50¢ @ 2.60¢; Nos. 10 to 14 Steel Sheets, 2.75¢ @ 3¢; Tank Iron, 2.40¢ @ 2.50¢; Tank Steel, 2.50¢ @ 2.60¢; Shell Iron or Steel, 3¢; Flange Iron, 4¢; Flange Steel, 3.50¢; Fire-Box Steel, 4.75¢ @ 5.50¢; Ulster Iron, 3.75¢; Boiler Rivets, 3.75¢ @ 4.25¢; Boiler Tubes, 55 % off for 1½-inch and less and 60 % off for 2-inch and larger. The Pipe trade are not buying heavily, but frequently. The last advance was unexpected by consumers, but so far as we can hear very well maintained by sales agents.

Sheet-Iron.—The demand for Sheets continues good. Mills are full of orders and very independent about taking further work for either July or August delivery. They quote on No. 27, f.o.b. Chicago, 2.90¢ @ 2.95¢. Jobbers quote from store, No. 24, 3¢; Nos. 25 and 26, 3.10¢; No. 27, 3.20¢.

Galvanized Iron.—In small lots trade has been quite active, but in large orders there is less doing than there was in the early part of the month. Jobbers' assortments are still in good shape, though mills are slow to accept further contracts. The heavy consumption of Black Sheets makes it difficult for galvanizers to secure stock in all numbers. Jobbers continue to quote 65 % off on Juniata and 65 % and 5 % off on Charcoal.

Merchant Steel.—Business is in about the same condition as a week ago. Country merchants and manufacturers with an established consumption have lately been filling up their stocks with lots sufficient to carry them over the time that mills will be closed during the early part of July, for the purpose of repairs, &c. Some go even further and take in stock enough to carry them over the entire month in case there should be labor trouble. Light-grade Steels have been in better demand than other qualities. On Soft Bars, round lots, f.o.b. Chicago, manufacturers quote 1.90¢ rates; Open-Hearth Spring Steel, 2.25¢; Open-Hearth Machinery, 2.10¢; Tire Steel, 2.15¢; Toe Calk, 2.30¢, flat. From store jobbers quote as follows: Mixed Machinery Steel, 2.10¢ @ 2.30¢; Tire Steel, 7.75¢ @ 8.50¢; Specials, 12¢ @ 25¢; Crucible Spring Steel, 3.50¢ @ 3.60¢; Open-Hearth Spring, 2.50¢; Open-Hearth Machinery, 2.50¢ @ 3¢; Bessemer Machinery, 2.30¢ @ 2.40¢; Sheet-Steel, 7¢ @ 10¢; Tire Steel, 2.20¢ @ 2.25¢.

Track Supplies.—Sales agents report a dearth of orders. Splice Bars are quoted at 1.55¢ @ 1.60¢; Bolts with Square Nuts, 2.50¢ @ 2.55¢; Hexagon Nuts, 2.60 @ 2.70¢; Spikes, 1.85¢ @ 1.90¢; Hot-Pressed Square Nuts, 5.85¢ discount; Hexagon Nuts, 6.35¢ discount.

Steel Rails.—There is no perceptible change in the condition of the market. The Illinois Steel Company have all the work they can do in their three mills for July delivery, and it may be stated, too,

that railroads apparently have all they want for the same period, as orders are scarce and not as urgent as they were the early part of the month. On Heavy Sections \$29 @ \$30 is quoted, according to time of delivery and quantity. For Light Iron Rails manufacturers are asking \$24 @ \$36 for 12-lb and \$33 for 30-lb. The demand for these continues rather active for immediate delivery, while there are a great many inquiries for Rails to be delivered later in the fall.

Old Rails and Wheels.—There have been but very few transactions in Old Rails for the reason that stocks are scarce and high-priced. Sellers are asking \$21 as bottom, and keeping themselves in position to decline selling should they receive an offer. Several lots are offered at \$23. Sales have been made on a basis which would be equivalent to \$20.50, f.o.b. Chicago, but it is doubtful whether the purchase could be duplicated. Old Steel Rails are quoted at \$17.25 for long lengths and \$14.50 for short pieces. Old Car-Wheels are in fairly good demand and held at \$17.50 @ \$18 by those who have any quantity of stock; \$17 has been offered without effecting sales. Sellers are not quite so firm as they were two weeks ago.

Scrap.—The quantity of old material offering is not so great as several weeks ago. Railroad companies are withholding their Wheels, Rails and better grades of Forge because they think that prices will advance next month. Dealers' quotations on 2000 lb are as follows: No. 1 Wrought, \$17 @ \$17.50; Fish-Plates, \$18; Car-Axles, \$21.50; Horseshoes, \$17; No. 1 Mill, \$13.50 @ \$14; No. 2 Mill, \$8.50 @ \$9; Cast Machinery, \$11; Stove Plate, \$8.50 @ \$9; Cast Borings, \$8; Wrought Turnings, \$10; Coil Steel, \$13.50; Leaf Steel, \$14.50; Locomotive Tires, \$15; Track Scrap, \$16; Mixed Country Wrought, \$12.

General Hardware.—Jobbers report an excellent trade on all lines of goods. It is something unusual to have their traveling salesmen send in larger orders at the close of this month than were general in May. It shows that goods are being rapidly consumed in the country, and the outlook for the balance of the year very flattering. Mail orders are also unusually large and numerous. There are no recent changes in prices on the part of manufacturers, and between jobbers they remain fairly steady on close margins.

Nails.—To outline the market would be to duplicate our last week's report. The only new feature in connection with the situation is another reduction in freight rates by the Canadian Pacific road from Boston to St. Paul, which goes into effect to-day. This reduction will be made by lines via Chicago to Missouri River points, and will enable manufacturers east of here to dispose of their product to jobbers and dealers in all sections at a lower price than was named last week without reducing their prices at mill. There is a wide difference of opinion on the future of the Nail market. Some manufacturers are becoming more independent, and refuse to meet prices. Jobbers who are desirous of buying continue to hammer the higher-priced makers with the price of the weaker ones for the purpose of getting a better article, and not infrequently gain their object. On carloads all Cut or all Wire or mixed jobbers quote \$1.85 rates for Cut Nails and \$2.30 for Wire Nails. In small lots Cut Nails are quoted at \$1.90 and Wire Nails at \$2.35. The demand for Wire Nails is quite active in small lots and the stocks of jobbers are much lighter than they usually carry, but the demoralized condition of the Cut-Nail trade prevents them from placing orders, as they believe that it will have a damaging effect on the price of

Wire Nails before long. In fact, several of the Wire-Nail manufacturers have in the last few days offered to take orders from jobbers for July and August delivery at 5¢ per keg less than what they were able to get last month.

Barb-Wire.—The manufacturers of Barb-Wire are to hold their consolidation meeting this week. The place selected is not positively known, but indications point to Cleveland or Cincinnati. The demand for Wire continues very active in small lots, on which jobbers quote \$2.75 for Painted and \$3.35 for Galvanized.

Pig-Lead.—Some 400 tons changed hands last week at about 3.85¢. Offerings were quite plentiful and near deliveries were the weakest options. Much uncertainty attaches to the probable decision of the Treasury Department in the Silver-Lead Ores, as for or against a duty will determine the near-future condition of the market.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., June 25, 1889.

The Iron trade is just in that condition which makes it hard to report correctly. The feeling is nervous and unsettled, with a general tendency towards higher prices, but the difficulty is to find what the ruling prices are. There are a good many that are "not quoting" at all, others don't seem to know what to quote, while a few are meeting the legitimate requirements of their customers at a trifling advance over last week's prices. The position is not without its difficulties—cost of production has already advanced considerably, and any further movement in the direction of higher prices would be certain to be met with a demand for higher wages. If an advance in prices was sure to be maintained manufacturers would probably not object to some advance in wages, but suppose the market reacts? This is the contingency which has to be met one way or other. Manufacturers are inclined to wait before committing themselves either way. The outlook is certainly encouraging, but after all a great deal depends on the action of the Western trade. If prices advance there the East is in a position to keep pace, but to secure permanency the movement must be instantaneous.

Pig-Iron.—The market has developed an improving tendency, and as regards Mill Irons, prices are a shade dearer. Foundry Irons are steady, but not quotably higher than they were a week ago, although good brands are scarce and could not be bought for late delivery unless at some advance over the figures quoted for spot lots. Mill Irons are easily 25¢ dearer, the general asking price being 50¢ advance. There is a great deal of inquiry for Iron, and sellers express much confidence in the outlook, although the attitude of the Southern companies is not yet clearly defined. The difficulty with this class of Iron is its varied quality as well as its variety of prices. Some of the more prominent companies are sold up, and are therefore not quoting on new business. Others offer at \$14.50, \$16 and \$16.50 ex-ship, with intimations that these prices can be shaded on bids from the right kind of buyers. Quality may be as satisfactory as other Southern Irons, but as the brands have not been used to any extent in this vicinity consumers are not inclined to make offers while they can get approved brands at a trifle more money. Hence while the quotations seem low, the Iron does not attract much attention. Local brands are held at from \$17 to \$18 at tide, for No. Foundry, \$16 @ \$16.50 for No. 2 and \$15 @ \$15.50 for Gray Forge. There is not much good Iron for sale at less than \$17.50, and while \$15 has been

shaded in one or two instances for Gray Forge, the feeling is very firm, with several sales of good-sized lots at \$15.25. The market, therefore, may be called firmer all around, with the average of transactions at probably 25¢ per ton higher than the week previous.

Blooms.—It is a most difficult matter to quote Steel Blooms correctly. As we said last week, some of the leading makers are out of the market, others claim to be getting 50¢ @ \$1 per ton advance, while others are accepting business of a desirable character at the figures herewith quoted, viz.: \$28 @ 28.50, delivered, for Nail Slabs; \$30 @ \$31 for Tank Slabs; \$32.50 @ \$33.50 for Shell Slabs; \$36 @ \$37 for Flange, and \$38 @ \$40 for Fire-Box; Charcoal Blooms, \$52 @ \$54; Run-out Anthracite, \$41 @ \$42.50; Scrap Blooms, \$32 @ \$33 per "Bloom" ton of 2464 lb.

Muck-Bars.—The market is bare of stock, so that prices are irregular and unsettled. Sales have been made at \$28.50, delivered, with a further demand at same price, but holders ask \$28.75 @ \$29. Probably \$27.50 @ \$28, at mill, might be accepted, although higher prices are confidently predicted.

Bar-Iron.—There is not the improvement in this department which the trade seemed to expect. The demand is better and prices are nominally higher, but the amount of business forthcoming at the advance is not important. At last week's prices some large orders could be had, but as the cost is considerably more than it was, manufacturers need some advance to let them out. The general feeling is that 1.85¢ base should be a minimum for first-class Bars, and those making such quality obtain that figure or let the business go elsewhere. Some outside mills accept 1.75¢, and still lower figures are mentioned for Western Iron, but in spite of the disparity in prices it is felt that the general tendency is toward improvement. Skelp Iron is inactive, but firm, at 1.75¢ for Grooved; Sheared at from 1.95 to 2¢. A much better demand is expected for Skelp Iron, as some large contracts for Pipe are under negotiation.

Plate and Tank Material.—The mills are very full of work, and large orders would be hard to place without causing a further advance in prices. There is a great deal of business to come on the market during the next 60 days, but as the most urgent requirements have been provided for there is a disposition on both sides to await developments before entering into further engagements. The feeling is very firm, nevertheless, and the chances seem to be ultimately in favor of higher rather than lower prices. Meanwhile quotations are about as follows (although some mills ask more, while others might shade a little, according to the condition of their order-books): 2¢ @ 2.2¢ for Ordinary Plates and Tank Plates; 2.10¢ @ 2.25¢ for Universal Plates; Shell, 2.4¢ @ 2.5¢; Flange, 3.25¢; Fire-Box, 3.7¢ @ 4¢; Steel Plates, Tank and Ship Plate, 2.2¢ @ 2.30¢; Shell, 2.5¢ @ 2.7¢; Flange, 2.4¢ @ 3¢; Fire-Box, 3.4¢ @ 4¢.

Structural Material.—There is very little change in this department. The mills have all the work they can handle for the present and all they care to take at current prices. The outlook for the summer months is unusually favorable, as there is a great deal of work that must be done promptly. Prices are firm but somewhat irregular, some asking an advance, others accepting last week's prices, viz.: Bridge Plate, 2.05¢ @ 2.15¢; Angles, 2.1¢ @ 2.2¢; Tees, 2.6¢ @ 2.7¢; Beams and Channels, 2.8¢ for Iron or Steel.

Sheet Iron.—The demand is of a very satisfactory character, coming as it does

from all classes of consumers. Mills have plenty of orders, and have no difficulty in obtaining full quoted rates for all they can deliver within a reasonable time. Prices for carload lots are about as follows:

Best Refined, Nos. 14 to 20.....	3¢
Best Refined, Nos. 21 to 24.....	3.20¢
Best Refined, Nos. 25 to 26.....	3.40¢
Best Refined, No. 27.....	3.50¢
Best Refined, No. 28.....	3.60¢
Common, ¼¢ less than the above.	
Best Soft Steel, Nos. 14 to 20.....	3¼¢
Best Soft Steel, Nos. 21 to 24.....	3½¢
Best Soft Steel, Nos. 25 to 26.....	3¾¢
Best Soft Steel, No. 27.....	4¢
Best Bloom Sheets, ¼¢ extra over the above prices.	
Best Bloom, Galvanized, discount.....	.65 %
Common, discount.....	.67½ %

Steel Rails.—Business is not active, but prices are very firm. Mills are fairly supplied with work for the next 60 days, and are not disposed to accept orders for later deliveries unless at about \$28 at mill. There is a good deal of inquiry, and it is expected that there will be a demand large enough to keep the mills fully employed at current rates or higher.

Old Rails.—There are so few Rails here, and so few wanted, that they are hardly worth quoting. Holders ask \$23 and upward for Philadelphia delivery, but consumers are quite indifferent unless they can get them at about that price delivered, and in most cases they get them on the terms named from roads in the interior, although \$23.50 @ \$24 has been paid for American Rails.

Scrap-Iron.—Good Scrap is scarce on the sea-board, but relatively in good supply in the interior. The result is a light business, but firm prices about as follows: \$20.50 @ \$21 for cargo lots; \$21 @ \$21.50 for carload lots, delivered, or for choice, \$22; No. 2 do., \$14 @ \$15; Turnings, \$14 @ \$15; Old Steel Rails, \$16.50 @ \$17.50; Cast Scrap, \$15 @ \$16; do. Borings, \$9 @ \$10; Old Fish-Plates, \$23 @ \$24; Old Car-Wheels, nominal, \$17 @ \$18, Philadelphia.

Wrought-Iron Pipe.—The demand is very satisfactory and prices firmly maintained. Mills are full of work, and it is said that some important contracts are on the point of being closed. Discounts unchanged, as follows: Butt-Welded Black, 52½ %; Lap-Welded Black, 65 %; Butt-Welded Galvanized, 45 %; Lap-Welded Galvanized, 52½ %; Boiler Tubes, 60 %.

Nails.—The demand is improving and the general feeling as to prices is better, but low sellers can still be found. For first-class Nails \$1.90 is quoted for carload lots and \$2 from store, but some brands are available at pretty near to the old figures. A general advance, however, is not improbable, and in fact is rather confidently predicted by some well-informed parties.

Messrs. John L. Hogan & Co. have removed their offices to the Bullitt Building (second story), 135 to 141 South Fourth street.

The partnership heretofore existing between E. M. Valentine and Ogden Armstrong, under the firm name of Valentine & Armstrong, has been dissolved by mutual consent. The business will be continued as heretofore by E. M. Valentine & Co.

Mr. Samuel D. Hopkins, who had charge of the warehouse and store of the Reading Iron Works, in Philadelphia, has resigned that position and formed a partnership with Mr. Charles E. Small, under the firm name of Hopkins & Small. The firm will act as manufacturers' agents for the sale of Wrought-Iron Pipe and Boiler Tubes, Engineers' and Machinists' Supplies, &c., at No. 206 South Fifth street, Philadelphia.

Cleveland.

CLEVELAND, June 24, 1889.

Iron Ore.—Gogebic Bessemers at \$4.50 are in good demand, and are selling freely. None of the mining companies report large orders for the past six or seven days, but a multiplicity of small ones, the aggregate amount of Ore sold varying but slightly from the record for the past six or eight weeks. Furnacemen seem satisfied with existing quotations, which are from 5% to 10% below the prices established at the beginning of the season. It is probable that the 1,500,000 or 2,000,000 tons of Ore still to be sold will be disposed of at the prices given below, which closely represent their market values. Sales of Champion and Republic Ores for delivery at Pittsburgh and in the Shenango Valley are reported. Considerable Minnesota Ore is also being sold for the same furnaces. Eastern furnacemen are still patrons of the Lake Superior mines, and it is believed that the sales of Ore for Buffalo delivery already exceed 700,000 tons. Ore is being rushed down the lakes at an unprecedented rate, the receipts at Cleveland for the past week being 76,000 tons, as compared with 39,500 tons for the corresponding week last year. Lake freights are stationary at 90¢ from Escanaba, \$1.10 from Marquette, and \$1.25 from Ashland and Two Harbors. The following are the present quotations for Ore, f.o.b. vessels, lower lake ports:

No. 1 Specular and Magnetic Bessemer Ores, Bessemer quality.....	\$5.75 @ \$6.25
No. 1 Specular and Magnetic Ores, Non-Bessemer quality.....	4.50 @ 5.00
Red Hematite Bessemer Ores, Bessemer quality.....	4.50 @ 5.00
Red Hematite Ores, Non-Bessemer quality.....	3.50 @ 4.00
Menominee Range Ores, Bessemer quality.....	4.50 @ 5.00
Menominee Range Ores, Non-Bessemer quality.....	3.50 @ 4.00
Gogebic Range Ores, Bessemer quality.....	4.50 @ 5.00

Pig-Iron.—The market retains all its encouraging features. The demand is increasing, and there is a very appreciable improvement in the number of sales reported. Buyers seem to fully comprehend the fact that prices can go no lower, and that the present low quotations will not much longer prevail. For this season, and on account of the large amount of Iron now going into consumption, the market has a firmer tone than has been noticed for eight or ten weeks. Following are the quotations:

Nos. 1 to 6 Lake Superior Charcoal.....	\$20.00 @ \$20.50
No. 1 Strong Foundry, Bessemer quality, $\frac{1}{2}$ ton.....	16.00 @ 16.50
No. 1 Strong Foundry, $\frac{1}{2}$ ton.....	15.50 @ 16.00
No. 2 Strong Foundry, $\frac{1}{2}$ ton.....	15.00 @ 15.50
No. 1 American Scotch, $\frac{1}{2}$ ton.....	16.00 @ 17.00
No. 2 American Scotch, $\frac{1}{2}$ ton.....	15.00 @ 16.00
No. 1 Soft Silvery, $\frac{1}{2}$ ton.....	16.50 @ 17.50
Mahoning and Shenango Valley Neutral Mill Irons, $\frac{1}{2}$ ton.....	14.00 @ 14.50
Mahoning and Shenango Valley Red Short Mills, $\frac{1}{2}$ ton.....	14.50 @ 15.00

Scrap-Iron.—Old-American Rails at \$21 @ \$21.50 are in fair demand. Old Wheels are plenty, but are selling sparingly.

Louisville.

LOUISVILLE, KY., June 24, 1889.

Pig-Iron.—There has been fair buying during the week, but the orders placed have not been large, owing to the fact that most buyers in this market have already supplied their wants for some time to come. Those who have not already purchased for the next four months are willing to buy at last week's prices, but in most cases are met with refusal on the part of furnaces, who desire a slight advance. The market is undoubtedly stronger, and shows a slight increase in prices, with a probability of further increase during the coming week. Opinions in regard to the future are varied. Some consumers consider that

further than a slight advance of 50¢ a ton, which will merely place the market on basis of January and February, nothing can be expected. Others believe that the condition of the country is such as to look for a general improvement in all Iron matters, and that the market will probably move up \$2 a ton between now and October. We quote as follows:

Southern Coke, No. 1 Foundry.....	\$14.50 @ \$15.00
Southern Coke, No. 2 Foundry.....	14.00 @ 14.50
Southern Coke, No. 3 Foundry.....	13.25 @ 13.75
Gray Forge.....	12.75 @ 13.25
White and Mottled, different grades.....	12.25 @ 12.75
Silver Gray, different grades.....	12.75 @ 13.75
Southern Charcoal, No. 1 Foundry.....	16.25 @ 16.75
" " No. 1 Mill.....	14.75 @ 15.25
Southern Car-Wheel, standard brands.....	21.75 @ 22.75
Southern Car-Wheel, other brands.....	18.00 @ 19.50
Hanging Rock Coke, No. 1 Foundry.....	15.50 @ 16.00
Hanging Rock Charcoal, No. 1 Foundry.....	19.50 @ 21.00
Hanging Rock, Cold Blast.....	20.75 @ 22.75

St. Louis.

OFFICE OF The Iron Age, 214 N. Sixth st.,
ST. LOUIS, June 24, 1889.

Pig-Iron.—The market shows but little change, although the general outlook is more promising than it has been for some time. Furnaces are disposed to quote higher prices, and in some instances are able to obtain them. There appear to be some, however, who either have no faith in the stability of prices or whose Iron is below the standard, who quote prices from 25¢ to 50¢ below the figures quoted herewith. The action of these furnaces has a disastrous result upon prices in general, and others, who might be disposed to hold prices, are compelled to meet the cut or lose the sales. The demand continues to be mostly for Forge Irons, but there have also been a few good sales of Foundry grades. For ordinary-sized lots we quote as follows, for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry.....	\$15.25 @ \$15.75
Southern Coke, No. 2 Foundry.....	14.75 @ 15.25
Southern Coke, No. 3 Foundry.....	14.25 @ 14.50
Gray Forge.....	13.25 @ 13.75
Ohio Softeners.....	17.00 @ 19.00
Lake Superior Charcoal.....	19.75 @ 21.50

Missouri.

Charcoal Foundry, No. 1.....	16.00 @ 16.50
Charcoal Foundry, No. 2.....	15.00 @ 15.50

Tennessee.

Charcoal Foundry, No. 1.....	17.00 @ 18.00
Charcoal Foundry, No. 2.....	16.50 @ 17.00
Connellsville Coke, f.o.b. East St. Louis, \$4.40; St. Louis, \$4.55.	

Bar-Iron.—The strong demand noted in last week's report continues to be the feature, and it looks as if this department, which has long been depressed, is in a fair way to recover. Mills are running full to keep up with the demand, and an advance in prices is only a question of a few weeks at least, and they are at present quoting firm, with an advancing tendency. Small lots from store are quoted at \$1.80; carload lots from \$1.60 to \$1.70, according to circumstances.

Barb-Wire.—Careful inquiry among the various mills in this locality shows a dull and sagging market. The demand has fallen off, and now is of such a character that manufacturers claim it barely pays to keep the mills running. According to the local papers several Barb-Wire combinations have been formed during the past few weeks, but at this writing any combination, either for curtailment of production or advancing prices, is as far distant as ever, and, in fact, manufacturers have come to the conclusion that it is a waste of time and money to endeavor to form any such combination in this line, as there are always some mills that have special reasons for withholding their support. Mills quote from \$2.75 to \$2.80 for Painted, and from \$3.35 to \$3.40 for Galvanized; carload lots at from \$2.65 to \$2.70 for Painted, and \$3.25 to \$3.30 for Galvanized, f.o.b. St. Louis.

Cincinnati.

Office of The Iron Age, Fourth and Main Sts.,
CINCINNATI, June 24, 1889.

Pig-Iron.—Further large transactions of Pig-Iron were made during the fore part of last week, and even larger sales could be made at the close if furnaces and consumers could reconcile deliveries. Reduced stocks already referred to, increased consumption, and large speculative purchases have produced the result which producers of Iron have labored so long to accomplish. The large companies have proved themselves adepts in trade; taking advantage of the changed conditions, they have retired to a higher level, which has whetted the appetite of buyers, inducing them to pay an advance of 25¢ @ 50¢ $\frac{1}{2}$ ton in several instances. The advance has been accompanied by a spirit of confidence, and inquiries concerning the market have been more anxious and more urgent. But while higher prices are demanded, buyers can place advantageous contracts on the higher plane, as to advance the market rapidly to a point where idle furnaces may be attracted to resume operations might check the improvement now apparent. The speculative syndicate which has been taking all the desirable Iron, as well as lower grades, at low prices is reported to have secured about 30,000 tons within the past few weeks, but purchases for this account during the week under review have been less free. Among the larger sales reported were 4000 tons Gray Forge and an equal amount of No. 3 Foundry (Southern) at \$12.75 and \$13.25 respectively, but at the close there are unsuccessful buyers at these prices; 900 tons No. 2 Southern Foundry at \$14, 500 tons do. at same rate, 600 tons No. 1 Southern Foundry at \$14.75, long delivery, extending deep into next year, and 1000 tons Lake Superior Car-Wheel at \$20.25, cash. The smaller sales at relatively better prices show a fair aggregate amount. The following are the approximate prices current here at the close for cash, f.o.b.:

Foundry.

Southern Coke, No. 1.....	\$14.50 @ \$14.75
Southern Coke, No. 2.....	14.00 @ 14.25
Southern Coke, No. 3.....	13.25 @ 13.75
Ohio Soft Stone Coal, No. 1.....	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2.....	14.50 @ 15.25
Mahoning and Shenango Valley.....	16.00 @ 16.50
Hanging Rock Charcoal, No. 1.....	20.00 @ 22.00
Hanging Rock Charcoal, No. 2.....	19.00 @ 21.00
Tennessee and Alabama Charcoal, No. 1.....	17.50 @ 18.00
Tennessee and Alabama Charcoal, No. 2.....	16.50 @ 17.00

Forge.

Strong Neutral Coke.....	13.00 @ 13.25
Mottled Neutral Coke.....	12.00 @ 12.25
Gray Forge.....	12.75 @ 13.00

Car-Wheel and Malleable Irons.

Southern Car-Wheel.....	20.00 @ 23.00
Hanging Rock, Cold Blast.....	22.00 @ 25.00
Lake Superior Car-Wheel and Malleable.....	20.00 @ 20.50

Manufactured Iron.—There has been but little change for either better or worse in Manufactured Iron during the week, and the prices current have fluctuated but little, but the stronger feeling in Pig-Iron has a strengthening tendency.

Old Material.—There has been very little demand for Old Rails, but the offerings, too, have been small and the nominal rate is \$19 @ \$19.50. Old Wheels have been held a little more firmly at \$17, with buyers at 50¢ $\frac{1}{2}$ ton less.

Nails.—There has been a moderate jobbing demand and a steady market. Steel Nails, 12d and 40d, sell at \$1.80 @ \$1.90 $\frac{1}{2}$ keg, with 10¢ rebate in carload lots at the mills, and Steel Wire Nails at \$2.40 @ \$2.50 $\frac{1}{2}$ keg.

Talbott & Lupton, Room 8, Wiggin's Block, Cincinnati, have been appointed sales agents for the Union Drawn Steel Company, at Beaver Falls, Pa., for this section of the country.

Pittsburgh.

Office of *The Iron Age*, 77 Fourth Ave.,
Pittsburgh, June 25, 1889.

There has been nothing especially important developed in the general Iron business during the past week. The mills are all in operation and many of them are working up to their full capacity, and the outlook is favorable. The most important event of the week in labor circles was the rejection by the men employed at the Homestead Steel Works of the new scale submitted by the firm, so that a strike appears inevitable. So far as known, none of the manufacturers have as yet signed the scale.

Freight rates on Iron and Steel from here eastward have been reduced about 3¢ per 100 lb. The new rates are elsewhere published.

Pig-Iron.—We have to record a more active and firmer market, and there are now but few, if any, sellers for future delivery at present prices. And even for immediate near-by delivery buyers are more numerous and sellers are indifferent about making additional sales, and the most of the furnaces in this district are pretty well sold up. We quote prices as follows:

No. 1 Gray Forge.....	\$13.90 @ \$14.00, cash
No. 2 Gray Forge.....	\$13.50 @ \$13.75, "
All-Ore Mill.....	14.50 @ 15.00, "
White and Mottled.....	13.00 @ 13.50, "
No. 1 Foundry.....	16.00 @ 16.25, "
No. 2 Foundry.....	15.00 @ 15.25, "
No. 3 Foundry.....	14.50 @ 14.75, "
No. 2 Charcoal Foundry.....	21.00 @ 21.50, "
Cold Blast Charcoal.....	25.00 @ 28.00, "
Bessemer Iron.....	15.75 @ 16.00, "

In regard to Bessemer Iron, while but few sales were reported, the market is firmer. We now quote at \$15.75 @ \$16, cash, for immediate delivery, but furnacemen are demanding considerably more for future delivery.

Muck-Bar.—Is in better demand and firmer, and while we are advised of a sale of 2500 tons at \$26, cash, there are but few sellers now under \$26.50, cash, and it is doubtful whether contracts could be made for August delivery under \$27, cash, as the feeling generally obtains that Pig-Iron is likely to advance within the next few weeks.

Spiegel.—Is still quoted at \$30 to \$30.50, cash, for 20 % and Ferro-manganese at \$59.50 @ \$60, cash, for 80 %.

Manufactured Iron.—There is a fair business; mills generally are pretty well employed, but prices have not improved. Of course manufacturers want to keep their mills in operation and hold their trade, which many of them have realized is easier to lose than regain, but many claim that it is difficult to get a new dollar for an old one in the present condition of the market. We continue to quote good Iron upon a basis of 1.60¢ @ 1.70¢ for Bars, 60 days, 2 % off for cash. Plate-Iron is quoted at 2.10¢ @ 2.15¢, and No. 24 Sheet at 2.70¢ @ 2.75¢. Skelp Iron, 1.60¢ @ 1.65¢ for Grooved and 1.90¢ @ 1.95¢ for Sheared.

Nails.—The Western Nail Association having dissolved, there are no regular prices, and it is difficult to give reliable quotations in consequence. Manufacturers here continue to quote at \$1.80 @ \$1.90, 60 days, 2 % off for cash. Wire Nails are quoted at \$2.20 @ \$2.25, 60 days, 2 % off for cash; car lots can be bought at the inside quotation.

Wrought-Iron Pipe.—The activity noted for some time past continues, and the combination prices are being faithfully adhered to; it is said that never since the association was formed have prices been so honestly maintained as the present year. There has been entire absence of cutting ever since the reorganization of the association. Discounts on Black Butt-Welded Pipe, 52½ %; on Galvanized do., 45 %; on Black Lap-Welded, 65 %; on Galvanized do., 52½ %; Casing, 54 inches,

62½ % off; other sizes, 60 % off; Boiler Tubes, 1½ inches and smaller, 55 % off; 2 inches and larger, 60 % off; 2-inch Tubing, 13¢ per foot, net; Line-Pipe, 2-inch, 10½¢ per foot, 2½-inch, 16¢; 3-inch, 21¢; 3½-inch, 25¢; 4-inch, 30¢; 4½-inch, 36¢; 5-inch, 42¢; 6-inch, 58¢; 7-inch, 70¢; 8-inch, 95¢; 9-inch, \$1.20; 10-inch, \$1.25; 12-inch, \$1.60.

Old Rails.—Old Iron Rails are still quoted at \$22.25 @ \$22.50. Some of the brokers report that while the offerings are light, the demand is chiefly for small lots, indicating that consumers are not disposed to buy beyond immediate actual wants. Old Steel Rails are still quoted at \$16.50 @ \$17 for short and \$19 @ \$20 for long pieces.

Steel Rails.—Heavy sections are still quoted at \$26 @ \$27, cash, at mill, according to character of order and delivery. The market is firmer, with an increasing demand. It is said that some of the orders of the Cambria Company have been transferred to other mills, the former, owing to its disablement, not being able to fill the same according to contract. Both mills, the one at Braddock and the other at Duquesne, are running up to their full capacity.

Blooms, Billets, &c.—Sales of Bessemer-Steel Billets reported at \$26.75 @ \$27.25, and Bessemer-Steel Nail Slabs at \$26.50. There have been no sales of Bloom Ends or Rail Crops recently, in the absence of which it is difficult to give reliable quotations.

Railway-Track Supplies.—There is an improved demand, but no change in prices. Spikes, 1.95¢, 30 days, free on cars at works in Pittsburgh; Splice Bars, 1.65¢ @ 1.75¢; Track Bolts, \$2.75 with Square and \$2.85 with Hexagon Nuts.

Old Material.—There is more inquiry, and the market is firmer, but prices remain about as last quoted. Sales of No. 1 Wrought Scrap, \$18, net ton; No. 1 Wrought Turnings, \$13 @ \$14; Old Car-Axles, \$23 @ \$24.50; Cast Scrap, \$13.50 @ \$14, gross; Cast Borings, \$11.50 @ \$12, gross; Old Car-Wheels, nominally \$18; sale of Beam Ends at \$17.25, gross. The indications are that there will be a materially improved demand for everything in this line next month, and if so the market will stiffen.

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts.,
CHATTANOOGA, June 24, 1889.

Pig-Iron.—The indications for the past week have been very encouraging to producers, and the outlook for the future, so far as prices are concerned, is much improved. The inquiry has been more active and the endeavors to contract for round lots for monthly deliveries in the future have been more numerous than formerly. Quite a number of furnaces have withdrawn from the market and others are asking an advance of 50¢ per ton, and instances are not wanting when large orders have been declined at that. So far as can be ascertained there has been but very little accumulation of stocks in the yards of any of the furnaces; nearly all on hand has been held some time by furnaces that are able to hold against any financial pressure. Large consumers are, as a general thing, confining themselves to grades and makes that they have been using in the past and with which they appear to be satisfied, and with good customers the furnaces are dealing liberally, so far as prices are concerned. Some three or four of the large Pipe-makers took in the situation and have contracted within the past month for large round lots of Pipe Iron, aggregating probably some 50,000 tons, which will put them out of the market for a while; but the increased

demand that has come forward from other sources would more than cover the capacity of the furnaces even if all were willing to sell.

The freight rates on Pig Iron from Birmingham have been decreased to \$3.65 to Chicago, Pullman, Grand Crossing and Hegewisch, formerly \$4.

The Attalla Furnace, recently blown in so successfully at Attalla, Ala., is now about up to her capacity. The Ore that is being used is from what is known as the Dirt Seller Vein, with some little Brown Hematite. This Ore is called the Red Fossil, and the vein runs from 3½ to 5 feet, continuing through the Coosa Valley with very little variation. It was partially from this Ore that the Confederate Government made their celebrated Brooks guns at Selma. Some two or three small furnaces were formerly run on this ore, and the product was made into Car-Wheels, which gained a wide celebrity through the South.

Detroit.

WILLIAM F. JARVIS & Co., under date of June 24, 1889, says: There has been a large amount of buying during the past week, and the Lake Superior Charcoal trade has been very active. Several large buyers have made their purchases for from six months to a year's delivery, and there are several buyers willing to contract if they can secure long deliveries at present price, or even at a slight advance. The demand for Coke Irons has also been better than for some time past, but Silvery Irons are most called for, and some large sales have been made at low figures. We cannot report any advance, but furnaces are refusing orders for long deliveries at present quotations, unless in special cases. We report an active market and quote as follows:

Lake Superior Charcoal, all numbers.....	\$19.00 @ \$19.50
Lake Superior Coke, all ore.....	18.00 @ 18.50
Lake Superior Coke, cinder mixed.....	17.50 @ 18.00
Standard Ohio Black Band.....	17.50 @ 18.50
Southern No. 1.....	16.50 @ 17.00
Southern Gray Forge.....	15.00 @ 15.50
Southern Silvery.....	16.00 @ 16.50
Jackson County (Ohio) Silvery.....	18.00 @ 18.50
Old Wheels.....	18.50 @ 19.00

New York.

Office of *The Iron Age*, 66 and 68 Duane street,
NEW YORK, June 26, 1889.

Pig-Iron.—The tone of the market continues firm, the advanced rates recently made on special brands being sustained. Buyers now realize that they no longer control the situation and are inquiring prices in directions which they had for some time neglected. The Thomas Iron Company, who are still the largest makers of Foundry Iron in the country, report that they will have no more Iron to sell this year except to their own recognized customers. Their output is now 3600 tons per week, which is being shipped as rapidly as it is produced. The condition of this company well represents the change which has come over the Iron trade. At this time last year they had a stock of 12,000 tons of Nos. 1 and 2 Foundry, but they now have only 1200 tons on hand, all of which will be shipped to customers before the 1st of July, thus leaving them with no stock. In almost equally good condition is the Tennessee Coal, Iron and Railroad Company, represented in this market by Naylor & Co. Their capacity is well sold up for months ahead and they are making large shipments. While ready to take small orders, they are not forcing the market, but can afford to await developments. These are representative concerns, North and South, and their condition shows very plainly the satis-

factory shape into which the Iron trade has gradually worked. The advance of 50¢ by the Thomas Iron Company goes into effect next Monday, but does not apply to their regular customers. The demand for Iron was quite good during the week, but the volume of business was not as large as in the preceding week. Quotations are as follows: Northern Irons at tidewater, \$16.50 @ \$18 for No. 1, according to brand; \$15.50 @ \$17 for No. 2; \$14.50 @ \$15.25 for Gray Forge. Southern brands sell at \$16.25 @ \$17 for No. 1; \$15.50 @ \$16 for No. 2; \$14.75 @ \$15 for No. 3; \$14.25 @ \$14.50 for Gray Forge, all delivered at New York.

Scotch Pig.—Consumers are still ordering for future delivery, but the entire quantity of Iron sold on this account will not reach very large figures. Stetson & Co. have cable advices from abroad that prices are slowly advancing, but quotations here are not affected, being as follows: Eglington, \$19; Dalmellington, \$19.50; Langloan, \$21.25; Summerlee, \$21.50; Coltness, \$21.50.

Spiegeleisen.—Twenty per cent. is quoted at \$28 @ \$28.50, and 80 % Ferro at \$59 @ \$60, with very small transactions.

Wire Rods.—The quotation ex-ship is still \$43, with no sales.

Structural Iron and Steel.—A very satisfactory business is in progress, but the demand is not so heavy as it was during the previous week. Buyers are realizing that there is not any danger just at present of a decided scarcity of material. Still, quotations are firmly held at the higher rates recently made, and it seems likely that they can be maintained. Prices are about as follows for delivery on dock: Sheared Plates, 2.05¢ @ 2.1¢; Universal Mill Plates, 2.1¢ @ 2.15¢; Angles, 2.05¢ @ 2.1¢; Tees, 2.5¢ @ 2.6¢; Beams and Channels, 2.8¢.

Plates.—The mills represented in this market are very full of work, and it is somewhat difficult to place orders with those whose products have the highest reputation. For delivery on dock quotations are as follows: Tank Iron, 2.05¢ @ 2.1¢; Shell, 2.4¢ @ 2.5¢; Steel Tank, 2.25¢ @ 2.3¢; Shell, 2.4¢ @ 2.5¢; Flange, 2.7¢ @ 2.8¢; Fire-box, 3.25¢ @ 4¢.

Bar-Iron.—Work is fairly abundant, with prices for dock delivery as follows: Common, 1.6¢ @ 1.65¢; Medium, 1.7¢; Refined, 1.75¢ @ 1.9¢.

Merchant Steel.—The week has been very quiet in this line, with quotations unchanged, as follows: Tool Steel, good brands, in large lots, 7¢ @ 7½¢; specials, 12½¢ @ 20¢; Crucible Spring, 3½¢ @ 4¢; good Open-Hearth Machinery, 2.30¢ @ 2.5¢; common ditto, 2¢ @ 2.25¢; Open-Hearth Spring, 2½¢ @ 2.5¢; Sheet, 6½¢, 8½¢ and 10½¢.

Steel Rails.—Inquiries are still coming forward but not for large quantities, except in the case of railroad projects involving some financing as a preliminary to business. The sales of the past week have therefore amounted to but a few thousand tons. The manufacturers, however, appear to be well supplied with orders for some time to come and are disposed to let matters shape themselves. They quote on small lots, such as are now being placed, \$28 @ \$28.25, at mill.

Track Supplies.—A fair volume of business is reported, but in Fish-Plates there is an unsettled feeling caused by the competition for orders on the part of mills making Steel. The usual quotations are 1.85¢ @ 2¢ at mill, but Steel Fish-Plates can be purchased at perhaps ½¢ lower. Track Bolts, with Square Nuts, are firm at 2.70¢ @ 2.75¢; Hexagon Nuts, 2.90¢, of Common Iron, and 3¢, Refined Iron.

Spikes are quoted at 2¢, with an upward tendency.

Old Material.—Old Iron Rails are in good request. A sale of 800 tons is reported at \$22, on cars, New York, equivalent to \$22.50 on the other side of the North River. Consumers are offering \$22.50 @ \$22.75, but are unable to secure Rails held here in store, for which \$24 is asked. Old Steel Fish-Plates have been sold at \$22, on cars, New York; Iron Fish-Plates at \$23, also on cars, New York. Wrought Scrap is firmer, with more business doing, and is now quoted at \$21 for No. 1 of good quality.

Financial.

There was much speculative activity during the past week, "industrial stocks" having become more than ever a special feature, the aggregate transactions in these latter on 'Change being considerably in excess of the total of all other descriptions. Oil trading also became exciting after a long period of inertia. Wheat, corn and oats advanced a little, with a moderate inquiry from shippers, chiefly for Europe, though partly for South America, but scarcity of freight room checked European business. Spot corn at the close was easier. Hog products steadily tend to lower prices. The break in coffee is still felt in the market. In dry goods there is a firm tone, so that opportunities for buyers are less favorable than a month ago. A pleasing feature is the good harvest reports. In California wheat is being gathered all over the State with the best results. A St. Paul dispatch says: "Conservative estimates made on 'Change place the wheat crop for Minnesota and Dakota at from 70,000,000 to 100,000,000 bushels." The wheat harvest is in progress as far north as central portions of Ohio, Indiana and Illinois. The Illinois State Board estimate the crop at 26,670,000 bushels. In Kansas the crop is gathered and President Cable, of the Rock Island, says the yield is a good one. The report of damage is contradicted. The business situation as a whole is generally construed as favorable, despite the export of gold and speculative tendencies, though the continued agitation respecting costs of transportation operates as a drawback. There is a belief, however, that rates will be maintained in prospect of heavy traffic in wool, grain, &c. Flying rumors in regard to trusts in coal, rubber, castor oil, plug tobacco and other descriptions of merchandise have not materialized. The decision of Judge Rightor, of New Orleans, making permanent the writ of injunction issued previously against the Cotton-Seed Oil Trust, forbidding the trust to exercise any privileges or franchises in the State of Louisiana, and declaring it to be an illegal and invalid association, is in harmony with Judge Barrett's Sugar-Trust decision in this city.

The Stock Exchange markets were active, with sales of trust stocks the leading feature, notably Sugar Refineries, Cotton Oil and Lead trusts. The buying of Sugar Trust was accompanied by a rumor of an extra dividend to be paid out of the enormous surplus which the trust claims to have in its treasury. On Monday transactions were enormous. The advance in Lead Trust was said to have been caused by a report that the Atlantic Lead Company, of Brooklyn, had been absorbed, and the rise in Pipe Line certificates was represented to be due to an increased export demand for oil. The boom in petroleum was not less marked, sales aggregating 5,000,000 barrels and prices touching 89¢. American cotton-oil certificates were sold on Judge Rightor's decision enjoining the trust from doing business in the State of Louisiana, but the price declined only ½¢, to 58, and rallied to 58½¢. On Tuesday

Sugar Trusts fluctuated widely and lost all Monday's advance, closing at 117½. Lead certificates were again lively with large transactions, but conservative investors fight shy. Railway shares received more attention, and were well sustained. The Standard Oil is credited with having inspired the entire deal.

United States bonds are quoted as follows:

U. S. 4½s, 1891, registered.....	106¾
U. S. 4½s, 1891, coupon.....	106¾
U. S. 4s, 1897, registered.....	128¼
U. S. 4s, 1897, coupon.....	128¼
U. S. currency 6s.....	118

The money market was a shade firmer, owing to the reluctance of capitalists to accept Trust certificates as collateral for loans on as favorable terms as railway shares. Time money on first-class collateral is quoted at 3 % for 90 days; 3½ % @ 4 % to end of the year. The supply of commercial paper is better, and is quoted 60 to 90 days at 3½ % @ 4½ %; good single names, four to six months, 4½ % @ 5½ %.

The weekly statement of the Associated Banks shows a loss in surplus reserve of \$1,382,725, which reduces the amount held above legal requirements to \$9,220,500. The exports of nearly \$6,000,000 gold and the absorption of money by the Treasury operated against the banks. The gain from the interior currency movement was less than usual. The loss in specie and legal tenders combined was \$1,496,500. Loans were increased \$615,600 and deposits decreased \$455,100. According to the custom-house report the exports of specie from New York for the week were \$5,894,839, making a total since January 1 of \$47,679,659, which is the largest amount recorded for the same period within the last decade. Director of the Mint Kimball, when questioned with regard to gold exports, said that they were caused by demands from France. "About the 1st of June," said the director, "the Bank of England raised by half a penny an ounce the price at which it would sell French gold coins, and recourse has been had to the United States." Another explanation is that shipments of gold result from sales of securities on French account by those who have suffered in copper speculations. Again, foreign capitalists are dissatisfied with the present aspect of the silver question. The commercial and crop situation indicate that the flow of gold will soon be in the opposite direction.

The total clearings of 37 cities last week show an increase of 30.6 %. New York gained 11.2 %; Boston, 37.7 %; Philadelphia, 11.4 %; St. Louis, 30 %; San Francisco, 25 %; Cincinnati, 20.7 %; Louisville, 36.9 %; New Orleans, 21.6 %; Omaha, 32.4 %; Denver 29.7 %; Cleveland, 27.2 %; Indianapolis, 20.2 %.

The importations of merchandise at this port during the week were valued at \$9,908,000. Since January 1 the total is \$242,958,000, as compared with \$231,142,000 for the same time last year. The exports were \$4,950,000.

The Bureau of Statistics statement of imports and exports for May, just issued, shows a considerable increase in the value of both exports and imports over May, 1888. Exports of merchandise during the past month aggregated in value \$52,169,197, against \$47,087,190 in May, 1888; while imports of merchandise in May past were valued at \$68,754,994, against \$60,482,698 in May a year ago.

The total merchandise and coin and bullion exports during May aggregated \$70,103,756, while imports amounted to \$71,415,617 an excess of imports over exports amounting to \$1,311,861. For the 11 months of the current fiscal year exports of merchandise, coin and bullion aggregated in value \$769,412,975, an excess of \$58,597,509 over imports for the same period.

Metal Market.

Copper.—The London market declined on spot Copper from £41. 10/ last Wednesday to £41. 2/6 yesterday, and futures from £41. 5/ to £40. 15/, with sales of 900 tons. Pending the renewal of a pool sale by the Lake companies to our manufacturers, to date from the 1st prox., the price to large consumers has remained 12¢. There is a diversity of opinion as to whether or not this figure will be fixed for the next contract. Some consumers think it may be reduced, while others are inclined to believe there will be no change, as consumption seems to readily absorb Lake Copper at 12¢. It has been jobbing at 12½¢ @ 12½¢, and casting brands have moved off at 10½¢ @ 11½¢, as to brand. During the first quarter of this year Spain exported 328,667 tons of Pyrites, against 270,754 in 1888 and 266,679 in 1887; of Precipitate the shipments were 8781 tons, against 10,164 and 9823.

Tin.—London gave way since our last report from £89. 10/, spot, to £88 last night, and futures from £90. 2/6 to £88. 15/. Sales were 800 tons. As we have followed suit, consumers have taken hold more readily, buying in the open market at 19.95¢ @ 20¢ some 200 tons, but with the drooping tendency subsequently accelerated, September and October were done on 'Change at 19.80¢, July at 19.70¢ and September at 19.85¢, the spot price winding up at 19½¢ @ 19½¢. At the Metal Exchange on the first call 10 tons July brought 19.85¢, and 10 tons October 20¢. **Tin-Plates.**—Only a moderate business having been done, prices remain without material change; the make continues excessive, and stocks accumulate on the other side, where prices are weak in consequence. The export of Tin-Plates from England to the United States during the past five months has been 150,232 tons, as compared with 117,254 tons same time last year and 109,943 in 1887; to all quarters, America included, it was 187,786 tons, against 153,781 and 145,072. We quote large lines, ordinary brands, ½ box: Siemens-Martin Steel, Charcoal finish, \$4.75 @ \$5.50; Coke finish, \$4.55 @ \$4.65; Terns, \$4.12 @ \$4.30; Coke Tins, \$4.22½ @ \$4.32½, and Wasters \$4.12½ @ \$4.15.

Lead.—Sales in the open market were restricted to 400 tons of Common Domestic at 4¢, the market being quiet and closing at this figure, while at St. Louis it has been strong at 3.80¢, and at Chicago at 3.85¢. Nothing has as yet been decided in Washington about the Ore question, the impression in this city being that a duty will be imposed; still, there is nothing positive to base this belief on, the contending interests being equally powerful. Spanish exportation of Pig Lead during the first quarter has been 42,105 tons, against 44,460 tons during the corresponding period of last year and 42,972 in 1887. At the Metal Exchange on first call 50 tons August Lead were sold at 4.05¢, closing at 4¢ bid and 4.07½¢ asked.

Spelter.—The floods out West have caused a rise in Ores there of \$1 to \$2 ½ ton, so that Common Domestic cannot be sold for less than 5¢ @ 5.05¢ in this city, at which it remains moderately active, while Silesian, with the rise in London, is held at 5.85¢ @ 5.90¢. Spanish Calamine exportation during the first quarter has been 6773 tons, against 8518 last year and 8287 in 1887.

Antimony.—Has been strong, with an active demand, at 15½¢ @ 16¢ Cookson's, and 14¢ @ 14½¢ Hallett's.

New York Metal Exchange.

The following sales are reported:

FRIDAY, June 21.	
50 tons Lead, spot.....	3.97½¢
16 tons Lead, August.....	4.02½¢
10 tons Tin, August.....	20.10¢

10 tons Tin, spot.....	19.95¢
15 tons Tin, spot.....	20.00¢
10 tons Tin, October.....	20.00¢

MONDAY, June 24.

10 tons Tin, September.....	19.80¢
10 tons Tin, October.....	19.80¢
50 tons Lead, spot.....	4.00¢

TUESDAY, June 25.

16 tons Lead, September.....	4.10¢
20 tons Tin, July.....	19.70¢
10 tons Tin, September.....	19.85¢
32 tons Lead, August.....	4.07½¢

WEDNESDAY, June 26.

50 tons Lead, August.....	4.05¢
10 tons Tin, July.....	19.85¢
10 tons Tin, October.....	20.00¢
30 tons Tin, July.....	19.95¢

Old Metals.

The following are the prices paid for Old Metals in New York:

Heavy Copper.....	½ lb 9¢
Light Copper.....	½ lb 8¢
Heavy Brass.....	½ lb 7¢
Light Brass.....	½ lb 6¢
Lead.....	½ lb 3¢
Tea Lead.....	½ lb 2½¢
Zinc.....	½ lb 2½¢
No. 1 Pewter.....	½ lb 14¢
No. 2 Pewter.....	½ lb 7¢
Wrought Scrap Iron.....	gross ton, \$17.00
Heavy Cast Scrap.....	gross ton, 12.00
Stove Plate Scrap.....	gross ton, 8.00
Burnt Iron.....	gross ton, 6.00

Coal Market.

The Hard-Coal trade is dull and weak, supplies from the mines being in excess of requirements, while the demand is of the character usual at this season. A report comes from Philadelphia that it is generally believed that no advance in prices can be secured in the schedule for July, "though an attempt to that end will be made." It is natural to reason that agitation on this subject would at least have a bracing effect, but it is remarked that "the raising of prices ahead of the market does not work as well this year as it did last." Producers are confident of an active period near at hand, although just now sales are heard of as low as \$4 ½ ton for Stove and \$3.75 for Chestnut, alongside. The reported total production last week is 807,600 tons, as compared with 580,000 tons a fortnight ago, and since January 1 the figures are 14,323,000—a decrease of 1,315,000 tons compared with the same time in 1888. The Reading Company contributed during the week 142,000 tons, indicating a rapid recovery from their loss by the flood. Anthracite has been helped by the cutting off of supplies of Bituminous Coal via the Beech Creek route and other heavy feeders. Further relief will come from the reopening of communication with the West about the beginning of July. From an official of one of the Anthracite Coal roads it is learned that the production in May was 3,016,531 tons, against 2,851,470 tons in May of last year. The stock at tide-water June 1 was 962,066 tons, against 964,628 tons on June 1, 1888. For five months the output is as follows:

Region.	1889.	1888	Difference.
Wyoming.....	6,307,812	8,541,891	Dec. 2,184,079
Lehigh.....	2,280,628	1,330,530	Inc. 950,098
Schuylkill.....	3,466,544	3,806,384	Inc. 161,169
Total.....	12,113,986	13,177,806	Dec. 1,063,821

Bituminous Coal is in full supply and prices are cut. Cumberland shipped for the week ending June 15 60,850 tons and since January 1 1,319,792 tons. On the Pennsylvania Railroad cars are scarce both for Bituminous and Anthracite, on account of the demands in transporting road-bed material for repairs. Grievous complaints are heard from the iron establishments in Eastern Pennsylvania, many of which were threatened with an immediate shut-down on account of the scarcity of fuel, as the Schuylkill Valley is largely supplied from Beech Creek and Clearfield.

At Pottstown the Ellis & Lessig Steel and Iron Company, Cofrode & Saylor's extensive bridge works and the Pottstown Iron Company were nearly out of fuel. At Conshohocken the Jawood Lukens rolling-mill and the Woods mill were nearly exhausted. In most cases there has been timely relief.

A serious strike may follow a failure to settle differences between Clearfield miners and the coal operators about pay for "dead work."

Imports.

Hardware, Machinery, &c.

Almgoist, A. W., Mach'y, cs., 25
Baker, Hermann & Co., Mdse., cs., 7; Arms, cs., 33
Brubacher, D., Mach'y, box, 1
Carnegie, Phipps & Co., Mach'y, pcs., 49
Cohn Bros., Hardware, cs., 3
Folsom Arms Co., H. & D. Arms, cs., 25
Field, Alfred & Co., Arms, cs., 38; Mdse., pkgs., 5
Godfrey, Chas. J. Arms, cs., 6
Graef Cutlery Co., Cutlery, cs., 10; Hardware, cs., 1
Hartley & Graham, Arms, cs., 13
James Emile, Sewing Machines, cs., 22
Korting Gas Engine Co., Mdse., cs., 3
Lau, J. H. & Co., Arms, cs., 15
Merch. Desp. Co., Arms, cs., 10
Pearsall, H. D., Mach'y, cs., 12
Spelsburg, E. G., Mach'y, cs., 1
Schoverling, Daly & Gales, Arms, cs., 4
Tryon, E. K. & Co., Arms, cs., 8
Winter & Smilie, Files, cs., 7
Witte, John G. & Bro., Cutlery, cs., 4
Wiebusch & Hilger, Lim., Mdse., cs., 23; Chains, csks., 18
Order: Nails, cs., 29; Mach'y, box, 1; ditto, pkgs., 5; Hdw., cs., 13

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, June 26, 1889.

The trade demand for named brands and Merchant-Bar Copper has been quite large, but it is believed that large holders continue to realize, and prices for Merchant Copper are therefore somewhat irregular, with sales of prompts at £41 the past few days. Few traces are noticeable of demand from French consumers. Nothing new transpires regarding the proposed agreement between producers.

Block Tin has continued to decline under the weight of free selling caused by full supplies from the Straits and comparatively little business. Sales were made at £88 for prompts, but from that price there was a reaction to £88. 10/ late Tuesday and a further 2/6 @ 5/ rise to-day.

Speculation in Pig-Iron warrants has been moderate owing to absence of outside interest in the market and prices are hardly steady. Stocks have been reduced owing to the damping-down of three furnaces on account of disputes with workmen and higher prices for Ores and Coal. A further reduction in the output from the same causes is likely. The demand for makers' brands of Scotch has been rather slow, but Middlesborough is more active and there continues to be a fairly active trade in Hematites.

The Tin-Plate market is in a dragging condition at present and sellers are less pressing with buyers in the matter of prices. No change of importance is quoted.

Bolckow, Vaughan & Co. have booked a large order for Steel Rails for India, and German makers have secured a large one for Australia. The market is quite lively, and a brisk trade is reported also in Billets and Blooms.

The Belgian Iron syndicate agreement has been renewed.

Consumers have been buying old material less freely, but firm prices are maintained by holders.

Scotch Pig.—The volume of business is moderate and prices are without material alteration.

No. 1 Coltness, f.o.b. Glasgow	54/6
No. 1 Summerlee, " "	53/6
No. 1 Gartsherrie, " "	51/6
No. 1 Langloan, " "	53/
No. 1 Carnbroe, " "	46/6
No. 1 Shotts, " at Leith	52/
No. 1 Glengarnock, " Ardrossan	51/6
No. 1 Dalmeilington, " "	45/
No. 1 Eglinton, " "	43/

Steamer freights, Glasgow to New York, 2/; Liverpool to New York, 10/.

Cleveland Pig.—More doing in this line and the market firmer. No. 3 Middlesborough quoted 38/6 @ 39/ prompt.

Bessemer Pig.—There is a fairly active business at steady prices. West Coast brands, mixed numbers, 49/6, f.o.b. shipping point.

Spiegeleisen.—The movement has continued free and prices are steady. English 20 % quoted 80/, f.o.b. at N. W. England shipping point.

Steel Rails.—A large business done at about last week's prices. Heavy sections quoted at £4. 10/, and light sections £4. 17/6 @ £5, f.o.b. at N. W. England shipping point.

Steel Blooms.—There has been a fairly active demand and the market is firm. We quote £4. 5/ for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Sales have been large and the market is strong. Bessemer, 2½ x 2½ inch, £4. 12/6, f.o.b. at N. W. England shipping point.

Steel Slabs.—Business moderate, but prices held firmly. Bessemer, £4. 12/6, f.o.b. at N. W. England shipping point.

Old Rails.—The demand fair and sellers firm. Tees quoted at £3. 5/ @ £3. 7/6, and Double Heads, £3. 12/6 @ £3. 15/, c.i.f., New York.

Scrap-Iron.—A fair business, with prices very steady. Heavy Wrought quoted at £2. 2/6 @ £2. 5/, f.o.b.

Crop Ends.—The movement is fair and prices steady. Bessemer quoted £2. 12/6 @ £2. 15/, f.o.b.

Tin-Plate.—Business moderate and prices hardly steady. We quote, f.o.b. Liverpool:

1C Charcoal, Alloway grade	15/3 @ 15/6
1C Bessemer Steel, Coke finish	13/6 @ ..
1C Siemens	13/9 @ ..
1C Coke, B. V. grade	13/ @ ..
Charcoal Terne, Dean grade	12/ @ 12/3

Manufactured Iron.—There has been more activity in this branch, at generally firm prices. We quote, f.o.b. Liverpool:

Staff, Marked Bars	£ s. d. @ £ s. d.
" Common	5 2 6 @ 6 5 0
Staff, Bl'k Sheet, singles	7 15 0 @ 7 17 6
Welsh Bars (f.o.b. Wales)	5 12 6 @ 5 13 0

Copper.—A fairly active business, with prices rather lower on Merchant-Bars. Today's prices for Bars were £41. spot; £40. 12/6 @ £40. 15/, three months' futures. Best Selected, £47.

Tin.—Quite active trading on the decline. Straits quoted to-day at £88. 10/ @ £88. 15/, spot, and £89. 5/ @ £89. 10/ for three months' futures.

Lead.—The market remains very quiet, with prices easy. Quoted £12. 7/6 for Soft Spanish.

Spelter.—There has been a large business and the market is stronger. Quoted at £19. 10/ for ordinary Silesian.

Foreign Markets.

EQUIVALENTS.

Franc, Peseta or Lira	Cents.
Florin (Netherlands)	19.3
Florin (Austria)	40.2
Vilreis (Portugal)	35.9
Vilreis (Brazil)	11.08
Mark (Germany)	54.8
Kilogram	2.205
Picul	134.

EAST INDIES.

COLOMBO, CEYLON, May 16, 1889.—*Plumbago.*—Prices are firmly sustained, with a good business doing. We quote at the close in rupees: Large lumps, 145 @ 170; ordinary lumps, 125 @ 160; Chips, 80 @ 95, and Dust, 40 @ 65. Following have been the shipments to date since October 1: To England, 99,788 cwt.; to Hamburg, 6206; to Antwerp, 6299; to Bremen, 1060; to Holland, 457; to India, 139; to Australia, 287, and to the United States, 85,951; together, 200,167, against last year 164,003, 134,020 in 1887 and 110,171 in 1886. The market for *Coir Yarn* is steady and unaltered at 7 @ 13 rupees per cwt., Nos. 1 to 4. *Exchange.*—Six months' sight on London, 1/4%.—*Volkart Bros., Ceylon and Malabar Coast, through their agent in New York, Mr. John W. Greene, 82 Wall street.*

SINGAPORE, May 9, 1889.—*Tin.*—Following currency of London prices, our market has given way to \$34.37½ per picul, at which there are sellers, but no buyers. Stocks are not large, nor are large supplies expected to arrive in the near future, so that any further decline there may be must take its origin in the consuming markets. The April shipments were: 422 piculs per steamer Kaiser-i-Hind, from Penang; 590 per Prometheus, 253 per Kasgar and 1682 per Preussen, hence all for New York; 169 per Monmir, hence to San Francisco, and 1682 per Nizam to New York. Total shipments to the end of April from the Straits, 43,894 piculs. *Cum Copal.*—Moderate arrivals have commanded full prices for good quality. *Gum Damar.*—There have been no arrivals. *Tonnage.*—Steamer rates for London are firmer, both for this and next month's shipment, at 40/ for dead-weight, with very little room offering by the regular lines. *New York via Cape.*—The Elise, due in a few days, will occupy this berth, having secured a full complement of dead-weight. For Boston the berth is vacant at the moment. *Exchange.*—Very firm indeed at 3/1¼ for six months' sight credit drafts.—*Gilfillan, Wood & Co*

MANILA, June 17, 1889.—*Hemp.*—The quotation is nominally \$15 per picul, as compared with \$8 same date last year, equaling 7/ ton, cost and freight, £48/5, against £27. 7/6. The clearances for the United States since January 1 amount to 118,000 bales, as against 83,000 last year; loading for do., 13,000, against 17,000; cleared for England since January 1, 120,000, against 150,000; loading for do., 8000, against 30,000; cleared for all other ports, 22,000, against 38,000; receipts at all ports since last cable, 21,000, against 10,000; since January 1, 288,000 bales, against 283,000 in 1888 and 219,000 in 1887. *Freight.*—\$7.50, against \$5.50. *Exchange.*—Six months' sight, 3/5¼, against 3/5¼.—*Ker & Co., per cable direct to their agent in New York, Mr. Charles Nordhaus, 89 Water street.*

SPAIN.

BILBAO, June 1, 1889.—*Iron Ore.*—An active demand has prevailed during the week; several contracts have been made, some being quite important. Most of the Rubios sold went at 7/ @ 7/3, some bringing as much as 7/6. Campanil being scarce it has not been easy to get any at 8/4 @ 8/6; Superior Campanil, 8/9 has been offered for in vain. A few cargoes of Vena brought 8/3 @ 8/6. Ore freights continue tending downward. Only 67,858 tons were shipped during the week. Total Ore export since January 1, 1,692,103 tons, against 1,598,585 in 1888. *Pig-Iron.*—While 2133 tons were exported during the week, 952 went coastwise.—*Bilbao Maritimo y Comercial.*

BELGIUM.

BRUSSELS, June 15, 1889.—*Iron.*—Consumers are not very anxious to subscribe to the advance of 2.50 francs per ton in Merchant Iron agreed upon at the late general meeting of Iron-masters. The quotation for sale at home is at present, for Nos. 1 to 3, 12.75 @ 14.75 francs per 100 kg., and free on board at Antwerp, 12.25 @ 13.75; Angles respectively, 13.75 and 13.25; ditto for vessels, 14.50. Makers of Beams not being members of the syndicate, they have not raised them. On June 1 32 blast-furnaces were in operation in Belgium and 18 blown out. The May product has been 81,685 tons, of which 54,715 Forge Pig; 4185 Foundry ditto, and 22,785 Steel. Steel-Rail orders from South America have been refused, our mills being engaged for months ahead, and they have gone to France.—*Monteur des Intérêts Matériels.*

GERMANY.

HAMBURG, June 15, 1889.—*Iron.*—The Iron trade of Rhenish-Westphalia has pretty much returned to a normal condition. In the Siegen district, while the strikes lasted, the blast-furnaces, with a reduced output, had nevertheless been kept going, and a good demand is now setting in for their product. Although Spiegel has been a little less sought for, it remains firm at 66 marks for 10 @ 12 % Manganese. White Luxembourg Pig improved to 36 @ 38 marks; Gray remains 40 @ 42. Finished Iron has kept uninterruptedly active; Hoop Iron in particular has been in lively request at advancing figures. All other rolling mill products have remained steady, but unaltered. Machine-shops, foundries and car-works have continued doing well. They quote Wire-Rods 110 @ 120; Steel Rails, 125 @ 130; last sale at 127; ditto for mines, 110 @ 115. *Metals.*—Have been looking up, Copper in particular, the general inquiry being brisk for all of them. We quote in this city: German Lead, 13 @ 13.30 marks per 50 kg.; Lake Copper, 64 @ 67; Spelter, 18 @ 18.50; Zinc, White, 21 @ 32, and Zinc, Gray, 20 @ 22.—*Borsenhalle.*

We have received from James Butterworth Randol, of San Francisco, the following statement relative to the trade in quicksilver: "The receipts of quicksilver at San Francisco for May and the first five months of the year were as follows:

	For May.	Jan. 1 to May 31.
	Flasks.	Flasks.
1887	2,017	9,955
1888	2,584	15,021
1889	931	6,000

The product this year to date, as indicated by the receipts, is only about 36 per cent. of last year and 46 per cent. of 1887. It is probably owing to the diminished yield that the price rose from \$40.50 per flask at the beginning of May to \$47.50 at the close of that month. The exports by sea from San Francisco last month were the lightest in a long time, consisting of only 76 flasks, including 63 to Mexico, 10 to New Zealand and 3 to British Columbia. The exports for the five months ending May 31, 1889, were as follows:

	Flasks.	Value.
New York	430	\$18,000
Australia	10	425
New Zealand	15	608
Central America	1	41
Mexico	2,012	83,791
British Columbia	10	421
Totals	2,478	\$103,286
In 1888	6,832	273,776

Last year New York took 2020 flasks, Hong-Kong 1010 flasks, Mexico 3388 flasks and Central America 240 flasks. China has drawn all its quicksilver from London this year. Mexico must also be using more foreign quicksilver this year."

Michael P. Grace, of New York, has contracted conditionally with the President of Peru for the repair of the damages on the Oroya Railway occasioned by recent inundations. During 90 years he is to pay to the Government as an annual rental 60,000 soles in silver until the receipts of the line do not exceed 1 per cent. on a nominal capital of £1,500,000. Mr. Grace is obliged to purchase from the Government all the rolling stock now in use on the line for 499,000 soles silver, and he will retain of this 100,000 soles for the payment for the building used as the Desamparados depot in Lima and 88,000 soles to pay off certain claims against the railway for the ground occupied, &c.

A fire in Johnstown on Monday originated from carelessness in burning debris, and 25 houses were destroyed, together with household effects. Previously a woolen factory was destroyed in like manner.

The losses of property by the recent floods in Pennsylvania are estimated by Bradstreet's at \$44,250,000.

Hardware.

With the close of the month and the ending of the half-year there is a falling off in business, which, however, continues fair in a small way. Buyers are naturally holding off until next month and orders are mostly for goods to meet immediate wants or for seasonable specialties, which are in average demand. There is, however, some movement in Southern business and a good many buyers from that section are in town. Prices are without material change, but in some directions there are indications of a better tone.

Cut Nails.

The effects of the flood in Central Pennsylvania are still being felt in the scarcity of Nails here and in the irregularity in shipments on old contracts. Prices remain about the same as previously reported, although the action of the Philadelphia Nail houses in putting prices up to \$1.90 for carloads and \$2 from store is having an effect on sellers here. The Oxford Iron and Nail Company had anticipated this action, but the others have not yet followed the lead thus established. The market is very sensitive, however, and dealers are insisting on knowing specifications before quoting prices. If everything is favorable they will sell at \$1.80 to \$1.90, but they are watching matters very closely, to be ready to take advantage of any decided change that may favor better prices. Parties who have tested many leading manufacturers both East and West during the past week with orders for considerable quantities of Nails report that a large number of them state that they have all the orders they care to fill for the present; others reply that they have shut down or intend to do so, and very few make quotations. Those who quote the prices ruling of late insist on an average ranging from 25 cents above the base price upward. Buyers willing to make out a specification running from 50 to 75 cents above base can secure favorable terms, but others cannot.

Miscellaneous Prices.

With a view to preventing the massing of orders by several concerns, some of the manufacturers who are attempting to control prices by combination have adopted a rule prohibiting any of their number from shipping goods to other houses than the one by whom they are ordered. Under this restriction it will be seen that in case the goods finally reach different concerns, it will be at the expense of reshipment.

The Improved Eureka Fruit-Pitter, manufactured by Farnsworth & Co., San Francisco, Cal., for whom John H. Graham & Co. are agents, 113 Chambers street, New York, a description of which is given on page 981, is sold at \$5 each, subject to a discount of 25 per cent. Furnished with both cushions, the list price is \$6.

The following is the discount sheet of the company showing the different goods covered by their catalogue and the prices. Terms, net 30 days or 2 per cent. discount for cash in ten days:

	Discount.
Rapid Vises and Attachments.....	25 %
Giant Vises.....	30 %
Giant Vise and Drill Combined.....	35 %
Eureka Vise.....	50 %
Steam Fitters' Vise.....	30 %
Never-Slip Combination Pipe and Bench Vise.....	25 %
All-Steel Open-Pipe Vise.....	25 %

Both Cast and Wrought Butts continue low, the market being considerably demoralized. Some Western jobbers are offering them at cut prices, which in some cases approximate more nearly than they should the manufacturers' quotations.

The condition of the Sand-paper market is such that it will be worth the while of buyers to look into it carefully before placing considerable orders. It is not unlikely that some retailers purchasing even fair quantities will be able to obtain advantageous figures after careful inquiry.

The condition in the market on Wringers has not in its material features greatly changed, but some prices, even lower than those generally prevailing, are made by some of the prominent jobbing houses, especially in the West.

The prices of Shot were to-day advanced to the following figures, subject to a discount of 2 cents per bag, 25 pounds, for cash within five days from receipt of bill:

Drop, per bag, 25 pounds.....	\$1.25
Drop, per bag, 5 pounds.....	.30
Buck and Chilled, per bag, 25 pounds.....	1.50
Buck and Chilled, per bag, 5 pounds.....	.35

There has been for some time some irregularity in the Coffee-Mill market, owing especially to the competition of some Western manufacturers. The Eastern manufacturers have accordingly made a reduction in their prices, and the discount on these goods now ranges from 50 and 10 to 60 per cent.

Items.

At a meeting of the trustees of the E. D. Clapp Mfg. Company, Auburn, N. Y., D. E. Clapp was elected president in place of E. D. Clapp, to whose death we referred in our last issue. John T. Groves, for several years the manager of the company's Cincinnati agency, was elected secretary, thus filling the vacancy occasioned by the death of Phineas S. Hadger. Mr. Groves is said to be thoroughly familiar with the Carriage Hardware business, having traveled for Hayden & Smith when the latter were sole agents for the sale of the E. D. Clapp Mfg. Company's goods. Until he assumes the duties of his office B. C. Smith will act as secretary *pro tem*. The new president has for a long time held the position of treasurer of the company, and has been prominent in the business affairs of Auburn for years, during which time he has occupied different positions of trust and honor. He is thoroughly familiar with the business of the company, having grown up with it, and it is expected that under his management it will continue to occupy the prominent position it now holds.

John H. Clark has become the proprietor of the Hardware business of Charles H. Nutt, Nashua, N. H., in whose employ Mr. Clark has been for 22 years.

Matthai, Ingram & Co., Baltimore, Md., issue circulars relating to their improved Keyless Fly-Fans, the Royal Child's Tray and Improved Fruit Cans.

Among the special notices on page 48 is one in which the advantages of Des Moines, Iowa, for manufacturing enterprises are referred to. Several lines of railway, low freights, cheap coal, light taxes and other advantages are referred to.

The Erie Specialty Mfg. Company, Erie, Pa., have made still further additions to their line of tools, and they are all seasonable specialties. They are Walker's Double Cutter Ice-Shave and Adjustable Ice-Grip, Handy Ice-Plane and Beverage Mixer, and are fully described in a circular.

E. C. Meacham Arms Company, St. Louis, Mo., have issued their circular No. 410, dated June 19. Its 16 pages are devoted to a varied line of Revolvers, Rifles, Shotguns, &c., with some specialties. Quotations are attached in the usual way.

At the annual meeting of stockholders of the Essex Horse Nail Company, Essex, N. Y., held June 4, 1889, the following Board of Directors were elected: D. F.

Payne, H. H. Noble, W. D. Palmer, E. B. Atkins, W. G. Lyon, C. W. Woodford, A. B. Ross, T. McFarland and C. A. Martin. At the meeting of the Board of Directors the following officers were elected: D. F. Payne, president; H. H. Noble, vice-president; W. D. Palmer, secretary and treasurer. The report of last year's business was very satisfactory and the outlook for the future is referred to as encouraging. W. D. Palmer resumes the office of secretary and treasurer for the eleventh time.

The Bonney Rapid Vise Company, Clinton, Iowa, have issued a new catalogue calling attention to their new line of Vises, of the special features of which a full description is given, the different patterns being illustrated. In addition to emphasizing the merit of their Rapid Vises they call special attention to their Never Slip Pipe and Bench Vise, which embodies several novel features.

Suit has been brought against some Western manufacturers for infringement of Sunken-Hopper Coffee-Mill patents, owned by Logan & Strobbridge Iron Company, New Brighton, Pa., and the Chas. Parker Company, Meriden, Conn.

The Reading Hardware Company have just gotten into their new works, a large portion of which was destroyed by fire some time ago. The new buildings are not only among the largest, but the most admirably equipped of the kind in this or any other country. They are believed to be absolutely fire-proof, while for light and air, combined with every possible convenience for their work-people, there appears to be nothing wanting. They employ upward of 700 hands, and are being run to their full capacity. In a recent circular they say:

We are pleased to announce that our new works are now completed and equipped throughout with the latest improved machinery, and have been in operation for some time. In addition to above, we shall continue to operate the Manhattan Works. The producing capacity of our new works is fully one-third more than that of our old plant, and we have no hesitancy in announcing that we are now in a position to fill all orders promptly. We have also been able during the past few months to manufacture and put in our warehouses, at Reading, New York, Chicago and Philadelphia, a well-assorted stock of our entire line of goods. We shall continue to keep all our popular finishes, including Geneva and Albion Bronzed, and Royal, Hecla, and Plain Bronze Metal, up to the high standard they have always had.

Surplus, Dunn & Alder, 97 Chambers street, New York, have been appointed direct representatives of the York Wire Cloth Company for the sale of their Wire Cloth. They have also been appointed by C. Hammond & Son, Philadelphia, as their representatives for the Southern States, export business, and the East and near-by trade.

As something of a curiosity, but at the same time illustrating the manner in which the daily newspapers refer to trade matters, we give the following, which recently appeared in a Cleveland paper. While Cleveland and Philadelphia are known as important points in this as in other branches of the Hardware and Iron trade, they will hardly claim the pre-eminence given them in the following paragraph, in which the writer's lack of familiarity with the matters in question is evident in nearly every line:

Among the latest accessions to the combinations is the Nut and Bolt Trust. Cleveland is known as a great Nut and Bolt manufacturing center, and this city and Philadelphia practically control the trade of the country. The Lamson & Sessions Company are among the largest manufacturers in America. A short time ago one of their representatives went to Youngstown, and as a result of his visit the two Nut and Bolt works there are in the combination. It is thought that the establishments in St. Louis will soon follow suit. The plan

pursued is a heroic one. If a manufacturer refuses to join the combination he is asked his price and his plant is purchased.

The Central Expanded Metal Company, Chess, Cook & Co., Pittsburgh, Pa., have issued a handsome catalogue illustrating their Steel Lathing and Netting, and explaining fully what Expanded Metal is and the uses to which it may be applied. Illustrations are given of the different-sized meshes from 4-inch down, and also of the Fencing-Gates, Window-Guards and other goods which are manufactured of it. Among these a Steel Door-Mat is to be noticed as a novelty. This catalogue is of especial interest, and is deserving the attention of those handling this line of goods.

Notice is given that the copartnership lately existing between L. S. St. John and J. W. St. John under the firm name of L. S. & J. W. St. John, Walton, N. Y., was dissolved on the 19th inst. by mutual consent. L. S. St. John will close up the business of the firm. He has also sold his interest to John P. White, and the business will be continued by the new firm of St. John & White.

R. Nickerson, W. B. Jackson and T. H. Nickerson announce that having purchased W. L. Child's interest in the firm of Childs, Nickerson & Co., Athens, Ga., assuming the liabilities and contracts of that firm, they will continue the business at the old location under the firm name of the Athens Hardware Company.

A recent issue of the Indianapolis *Herald* contains a description of Kokomo and its principal industries. Among these a prominent place is given to the Rockford Bit Company, whose factory is alluded to as one of the most complete in the city, and figures are given indicating the extent of its business. An illustration is given showing the works as originally built, but without the extensive improvements that have recently been added in order to accommodate the company's trade.

The R. Loveland Axe Company, Lamar, Pa., were badly damaged by a recent flood. Both their dams were torn out, embankments injured and in large part destroyed, houses carried away, &c., but they expect to be in operation by the middle of August. They desire to acknowledge the receipt of half a dozen Wheelbarrows from Pugsley & Chapman, 8 Liberty street, New York, which they generously donated them.

Obituary.

At a meeting of the National Association of Carriage Hardware Manufacturers of the United States, held on the 19th inst., the following resolutions, with reference to the death of their president, E. D. Clapp, which were reported by the Committee on Resolutions, composed of C. W. Scudder, J. M. Foote, D. F. Southwick and F. L. Cowles, were adopted:

Whereas, The National Association of Carriage Hardware Manufacturers of the United States is called upon to mourn the loss of its president, Emerous Donaldson Clapp, who died June 10, 1889;

Resolved, That we offer to his relatives and business associates our sincere sympathy, and feel deeply the loss of a presiding officer we all respected and loved, whose counsel and kindly word will long be missed and whose judgment and broad, comprehensive views have made him our leader in fact as well as in name since our organization, and whose loss is felt by each member as the loss of a personal friend.

Resolved, That the office of president remain vacant until the next annual election as a further expression of our regard, and that these resolutions be duly engrossed and also published in the several trade journals.

The Wire-Nail Card.

The Hardware dialogue which was given in our last issue under the heading of "How It Looks in the Country" has evidently been read by the trade with a good deal of interest. The points made in it have received the attention of the trade and our correspondence indicates that many retailers sympathize with the views there expressed. So radical a change as is attempted in the new card, with its change of base price and extension to the papered goods, would naturally cause some friction; but some of our correspondents, while acknowledging this, anticipate that after a little the trade will find the new card to work satisfactorily. There is, however, naturally some diversity of opinion in regard to the whole matter and our correspondents look at it from different points of view. Referring to the advance on the leading sizes of Standard Nails and the greatly diminished margin on the papered goods we have the following advices from a merchant in Vermont:

I hear some complaint from customers that the advance is quite sharp on the sizes that are used mostly, viz., 8d, 9d and 10d, and I have to try to explain to them that the price has advanced, but they say, "you must put them in at old price," which is rather hard to do. But on shelf goods in this branch I think the new card takes our margin right away. Any customer who has a Nail Card can tell just how much extra he should pay on a 1 pound paper of Brads, and we get only about 1 or 2 cents margin, while before, with the high list and liberal discount, we could get from 3 to 5 cents margin on a paper and the customer was satisfied. This part of the card I should like to see changed back to its former place. It is the dollars we are here for and not for convenience entirely.

Another merchant takes a more favorable view of the card, and finds the objection to it principally because it is another change, a thing for which the trade in general have a dislike:

In my travels over this section I have heard some fault found with the new card of extras. The fault seems to be based on a dislike for a change so soon after the adoption of the card of 1888, but I think it will work all right after the thing gets settled down and customers get a little more used to it. There is no special difficulty; only have to stop and explain to customers, and some of them have got to grumble at something, and the new card is that something at the present time.

Many retailers will doubtless consider it good business policy to say nothing to their customers about the new card, using it simply for convenience in buying, but making their own net prices in selling. This is the course adopted by our correspondent whose letter is given below, who at the same time alludes to the dialogue in our last issue:

We have not encountered the difficulties set forth in the dialogue, "How It Looks in the Country," because we have stopped talking "base price" to our customers, and when the price of Nails is asked we ascertain what size and then quote accordingly. Of course with "C. B." a word or two of explanation is necessary. "C. B." will readily come to see that there is no more reason why he should buy all sizes of Nails from 10d to 60d at the same price per keg than that he should buy all lengths of Screws from 1-inch to 3-inch at the same price per gross.

The following letter refers to the relative merit of Cut and Wire Nails, and suggests that the base on both should be 10d:

The price of Wire Nails has caused many who have been using them to take the Cut Nails. I sell now 100 kegs Cut to 10 Wire. The price is one thing and the holding in wood another that has brought

about the change. The old list with rod for base on both Wire and Cut Nails would suit all the best.

The same idea is favored by a Massachusetts house, who write:

The idea of "How It Looks in the Country" is very good. The basis on Nails should start at rod Nails. It saves lots of talk with people that do not understand about these things.

Still another merchant is disposed to take issue with the views expressed by one of our correspondents whose letter is given above, and favors the new card because it diminishes the difference that formerly existed between the price of the miscellaneous and the penny Nails, and also tends to reduce the number of extras to be carried in stock. After alluding favorably to the article in our last issue our correspondent adds:

The difference between keg Nails and those in papers was much too great and should have been equalized, and from our standpoint such a great number of extras would seem to be unnecessary, as they are certainly perplexing.

A Hardware house in this State thus emphatically condemns the new card:

We read with much interest as well as amusement the article in last week's *Iron Age* entitled "How It Looks in the Country." We fully concur with the writer thereof and think the article just "hits the nail on the head." We have been in no hurry to adopt the new Wire-Nail card owing to the fact that we had a fair stock of Wire Nails on hand when the change was made, and we feel that we have only just got the old card-rate working nicely with our customers and so dread making the change, as our trade is largely with the farmers, and it takes a vast amount of talking to convince them that they are not being imposed upon, and in this case we are somewhat of the opinion that such is the case. We would therefore have a poor show of convincing them that this new rate is either just or right. We shall make the change when obliged to and quote Wire Nails each size separate, without using the term base at all. We think these frequent and apparently absurd changes have a tendency to disgust merchants with the Wire-Nail trade, and the tendency will be to push good Steel Cut Nails.

We append a number of extracts from Hardware men in New England, leaving those from other parts of the country until our next issue:

NEW BRITAIN, CONN.—We have read the article entitled "How It Looks in the Country," and can say it is not overdrawn a particle. Many of our customers order Nails from time to time, and when they receive their bills at the end of the month it is hard to satisfy them why we charge 20 to 35 cents more on some sizes and less on others than previous month. However, we have become reconciled to it, and until manufacturers find out what Wire Nails cost them suppose we must submit. It certainly is very annoying to retailers.

RUTLAND, VT.—We find it difficult to introduce the new Wire-Nail card, and we continue as yet to sell on the old base. In my opinion the price should be the same from 10d to 60d.

CAMBRIDGEPORT, MASS.—We have no trouble in selling Wire Nails at the new card rate.

LEBANON, N. H.—The dialogue in last week's *Iron Age*, entitled "How It Looks in the Country," hits our case exactly. We think the manufacturers of Wire Nails would do well to make an average price on say 10's to 60's for a base and proper advance on other sizes. It certainly is very confusing and we think demoralizes trade, changing the card so often.

FALL RIVER, MASS.—We are not finding any such difficulties in the Nail list as our country friend speaks of. The Wire Nails are being taken here now in large quantities and are giving satisfaction.

BRIDGEPORT, CONN.—We think the Wire Nail card all right for the shelf goods, but should prefer to have had the Standard Nails nearer the Iron Cut Nails as to extras—then there would be less confusion.

PROVIDENCE, R. I.—The new Wire-Nail card is not received with any more disfavor than the last change of the Cut-Nail card was.

HARTFORD, CONN.—Our customers have hardly got accustomed to the new list as yet, but as far as we know they seem to like it, as the list is now more uniform.

WESTFIELD, MASS.—We have been very much surprised to read in *The Iron Age* for the last two or three weeks that the card was generally being received with favor. Diligent inquiry of traveling men failed to locate the place, and common sense refused to assign any reason why the public generally should approve of it. Were it not a serious matter and apparently approved by gentlemen worthy of respect, we should consider it simply the hasty work of some "smart Alecks" to be repudiated by their principals upon consideration.

NORWICH, CONN.—We have had very little comment as yet on the change in price of Wire Nails, the contractors to whom we sell the bulk of these goods not having had their attention called directly to it. The change will not be heard from until they get their July invoices.

PORTSMOUTH, N. H.—Our customers never take very kindly to the changes in lists. With us new lists always make more or less talk, and it takes some little time to get people to understand them, but they soon fall into the procession and accept it as a matter of course.

PAWTUCKET, R. I.—The sale of Wire Nails in this section is yet so limited that we don't experience any difficulty from the fact that people are not posted and we don't under present circumstances use the base price. It appears to us to have been an ill-considered change.

BANGOR, ME.—We have read the amusing dialogue. There is more truth than poetry in the story. The farmer wants plain, square dealing, and in order to gain his confidence the A, B, C's must be very plain. We have nine clerks in our retail department, and we figure that each man wastes an hour or two every day figuring the relative value and position of the new Wire-Nail card.

Meeting of the New York State Association.

The meeting of the New York State Association of Hardware Jobbers, in Buffalo on the 20th inst., was well attended, and with the hearty reception given by the merchants of that city and the attentions which were shown to the members of the association the session is referred to as having been exceptionally enjoyable. The officers of the association are as follows:

President, Robert McCarthy, of McCarthy & Son, Syracuse.

Vice-president, C. E. Walbridge, of Walbridge & Co., Buffalo.

Secretary and treasurer, James W. Eager, Syracuse.

In addition to the above the following members were present:

Robert Mathews, of Hamilton & Mathews, Rochester.

Ross R. Spaulding, of Kennedy, Spaulding & Co., Syracuse.

Mr. Barker, of Barker, Rose & Gray, Elmira.

I. D. Booth, Elmira.

Daniel Pratt, of Pratt & Co., Elmira.

J. M. Goss, of Weaver & Goss Hardware Company, Rochester.

C. M. Tillinghast, 2d, of J. M. Warren & Co., Troy.

Mr. Sims, of Howe & Co., Troy.

Mr. Turner, representing Morris E. Viele, Albany.

George Dana, of Wright & Co., Utica.

Mr. Parshall, of Parshall & Searle, Syracuse.

J. W. Black, of Burhans, Black & Co., Syracuse.

Hobart Weed, of Weed & Co., Buffalo.

James R. Smith, of Weed & Co., Buffalo.

Harry Walbridge, of Walbridge & Co., Buffalo.

Among the guests present who are not members of the association, we are advised, were the following: Mr. Deming, president of the George Worthington Company, Cleveland; H. S. Blossom, of W. Bingham Company, Cleveland; W. H. Cowles, secretary of the Cleveland Hardware Jobbers' Association, and E. H. Fowler, Buffalo delegate of the National Heavy Hardware Association.

The time of the association was divided between the consideration of matters of trade interest and the enjoyment of receptions and other social attentions. The forenoon session was devoted to social chit-chat with a view to promoting the best interests of the Hardware Jobbing Trade and increasing business by a cordial interchange of ideas and experiences. At 2 o'clock a sumptuous repast was served at the Niagara. At 4 o'clock the association accepted the invitation of Col. A. J. Barnard to go down the river to Falconwood, on Grand Island. Upon their return they were treated to a ride through the Park, and in the evening were banqueted at the Buffalo Club by Gen. E. B. Jewett.

A pleasant feature of the meeting was the receipt of a neatly executed card of invitation from the American Bit-Brace Company to visitors to inspect their works while in the city. It read as follows:

The American Bit-Brace Company extend you a cordial invitation to visit their office and factory while you are in our city. With several new, ingenious and very interesting special machines to exhibit we can promise you a pleasant time, and can show you how we turn out 100 dozen (Pedersen's) Bit-Braces complete daily. We are within two blocks of the depots, at Nos. 122, 124, 126 and 128 Washington street, corner Scott.

A. D. WHITE, Manager.

BUFFALO, June 20, 1889.

Those who attended the day after the meeting felt amply repaid, we are advised, for the time spent, expressing themselves that they had seldom seen so well-ordered and systematic a factory, most of the machinery in which was made especially for the particular requirements of making Bit-Braces. It was designed and made by their superintendent, Mr. Wilcox, and is referred to as exceedingly interesting and ingenious. In this way the American Bit-Brace Company did their share for the entertainment of the wholesale merchants of the State.

Syndicate Buying.

There has been for a number of years a system by which some of the leading jobbing houses in the country have been represented in some of the principal markets by parties sometimes incorrectly designated as Syndicate Buyers, who by purchasing large quantities of goods and sometimes massing orders are in a position to secure favorable terms.

As bearing upon this question and the influence of such houses in the trade we have the following communication from a well-known manufacturing concern. It will be observed that the disturbing influence which syndicate buyers are supposed to exert upon the trade is especially referred to:

Within the last few years there has grown up a system in connection with the wholesale hardware business which, while it is pretty generally understood among the trade, has never as yet I believe been

recognized in your columns. I refer to what is known as "syndicate buying," the plan of which may be briefly described as follows:

B. & Co. hire an office in New York and hang out a sign designating themselves as "Purchasing and Commission Merchants," or by some other term that may mean much or little. They secure the patronage of a number of wholesale Hardware houses in different parts of the country for whom they arrange to act as New York buyers, each concern paying them a stipulated salary. B. & Co. then open correspondence with various manufacturers of Hardware, representing that they control the trade of so many wholesale men, and asking for the lowest prices that the said manufacturers will make, subject to a commission (generally 5 per cent), which is to be paid to B. & Co. for securing the business. As a rule they find some smaller manufacturers, who do not keep men on the road, and who, being anxious to extend their trade, are willing to meet the lowest market price and allow the commission stipulated. The goods are generally shipped and billed to the different Hardware jobbers represented by B. & Co., and commissions paid to the latter by the manufacturer at the end of each month or quarter. B. & Co. then turn over to each of their patrons all the commissions they receive from their respective purchases, and whatever the Hardware jobber realizes from the commissions more than the salary he pays B. & Co. is, he figures, to him clear gain.

Such is a brief outline of the plan of the syndicate buyer. There is probably much more to it that could be best explained by the participants themselves, but the main parts have been given. The system is viewed in various ways by those who have had occasion to consider or discuss it. The Hardware jobbers who make up the various "syndicates" must of course think they are benefited or they would not pay their money to the New York buyer. On the other hand, it has been found that the jobbers who do not patronize the system are as a rule very bitter against it, some of them characterizing the buying concerns as "leeches on the Hardware trade," and going so far as to say that they will not purchase from manufacturers who sell any goods through these agencies.

The manufacturers are also divided in their opinions, some of them refusing to have anything to do with the syndicate buyers and others taking such business as they can see any margin in, reasoning that "one man's money is as good as another's." One bad feature in the situation for the manufacturer is that it withdraws from the market a number of buyers in different parts of the country, many of them in large business centers, substituting instead one purchasing agent in New York, through whom all the business must be negotiated. As a manufacturer will naturally figure closer and bid lower for the united trade of a dozen or more houses than he could for one, the result is a constant depression of prices and unsettling of the market. Furthermore, the manufacturer is really at a loss at this time to know who to quote, for reasons which can best be shown by an illustration.

The H. Mfg. Co. have been selling some goods through B. & Co., say at \$1 per dozen for a certain article, allowing 5 per cent. commission, realizing 95 cents net. F. & Co., Hardware jobbers in Chicago, write to the H. Mfg. Co. for "lowest prices, tallest discounts," &c. Supposing that they are bidding on an even plane with their competitors, the H. Mfg. Co. quote F. & Co. 97 cents per dozen for the article referred to above. Do they get the order? No; but shortly afterward

they receive a letter from B. & Co. saying "Our customers in the West are being quoted 97 cents. We expect you to meet this figure, subject to our 5 percent. commission; otherwise we will have to look elsewhere." The H. Mfg. Co. thus discover that they have been duped.

Experiences of this kind soon demonstrate to manufacturers that it avails nothing to quote *bona fide* prices to Hardware concerns who patronize the syndicate system, as the figures are only turned over to the New York agent, who makes it his business to find some one that will meet them and allow him a commission. But the trouble is that the number of the syndicates has so increased that it is not always easy to tell who belongs to them and who not; and in quoting prices to a new correspondent the manufacturer may unwittingly be playing into the hands of the New York purchasing agent, whose patrons use these means to keep him posted.

What, it may be asked, will be the outcome of this system? In the writer's opinion the Hardware concerns who compose the syndicates will in time discover that they are unable to obtain quotations from manufacturers direct, and are thus practically at the mercy of their New York representative, leaving them in a handicapped condition as compared with competitors, who can post themselves from all sources. They will then, I believe, make up their minds that it is best for every tub to stand on its own bottom, and that they can serve themselves best by withdrawing from the syndicate and acting independently. I may not have reasoned correctly in reaching this conclusion, and would be glad to see further discussion of the matter in your valuable columns.

It is proposed by certain parties to extend this system to retail houses, and we have seen a circular in which the plan to be pursued is thus outlined:

There has been established for a number of years among the largest jobbing houses throughout the United States a syndicate system of purchasing goods. They have a resident buyer at a central point to watch the market, secure "specials" and lump all orders, thus obtaining a quantity price on many goods much lower than could be obtained otherwise. We propose to inaugurate a similar system, with offices in New York and Philadelphia, for the benefit of the largest retailers and jobbers throughout the country, the advantages of which will be as follows:

1. All correspondents will have the privilege of having a permanent representative in the center of the Hardware industries, to whom all business matters can be referred, such as freight rates, allowances, freight insurance, &c.

2. A confidential price sheet will be mailed as often as obtainable, specifying any inside prices and special lots which we may be able to obtain.

3. We will lump all orders for staple goods, and thus obtain a price as low as the largest jobber, and in many instances lower, thus: Suppose 100 of our correspondents advise us that they can use, say, ten dozen Coal Hods; in the aggregate this would amount to 1000 dozen. The ability to place such a large order would enable us to secure a special price, which our correspondents will have the entire benefit of. This is merely a single instance of what can be done, as the same scheme will apply to all staple goods.

4. It often occurs that a merchant requires little odds and ends not directly in the Hardware business, and we will on solicitation hunt them up and buy them to the best advantage of our correspondents.

Any business man can see at once the great benefit derived by buying at bottom prices, and it is a proven fact that the plan of co-operative buying is successful,

and we are confident of earning for each of our correspondents an amount much greater than the trifling cost of our system. We will limit the number of our correspondents and will not accept more than one in cities of less than 100,000 population.

We shall be glad to hear further from manufacturers and merchants in regard to this question, which is one of direct and practical interest, as there appears to be at the present time something of a tendency toward the increase of this system.

Duluth.

The growing commercial importance of this city is generally recognized, the indications pointing to it as destined to be before long one of the largest and most important trade centers of the West. Apart from its development in trade generally, enterprises are on foot looking to giving the city a prominence in the Hardware business which it has not heretofore occupied, and plans are being made for the erection of a Hardware building which will compare well with any in the country, and will have, it is expected, some special advantages in location and construction. The parties interested in this movement are the Wells-Chapin Company, whose building it is expected will be erected on Slip No. 1, Bay Front, on the dock of the Duluth Dock Company. It will be so situated on the harbor front that vessels can unload their cargoes at one side of the building, while railway cars will carry the sold product away from the other side. Thus is avoided the expense of drayage, and a saving is made both in money and time, of no little importance to the wholesaler. In regard to this building and its construction the following particulars are given:

The new building is to be built on plans of Palmer & Hall, architects, of this city, who have taken great pains in its designing. It will rest on 1200 piles, capable of sustaining a weight of 30,000 tons. There will be three rows of continuous piling around the outside, besides a row of sheet piles and nests of four, five and six piles under the whole interior. Its dimensions will be 100 x 100 feet, 5 stories high, reaching 72 feet to the brick cornice. The lower floor, which is designed for holding Flat and Heavy Iron and Steel, will be 19 feet high in the clear, and is calculated to sustain a load of 500 pounds to the square foot. The second floor is 12 feet high, those above it about 10 feet, and all will carry a load of 250 pounds to the foot. Ordinary heavy warehouses never carry more than 250 pounds to the foot, and a dense crowd of people is calculated at 80 pounds. Through the center of the building, sunken below the lower floor, will run a 14-foot drive for teams and delivery wagons for local trade.

The building will be what is known as mill or slow-burning construction and will be of brick, in plain but neat and massive architecture. There will be one large and one small elevator, each run by steam, and the elevator shafts and stair-ways will be inclosed in brick walls. Posts throughout the building will be of wood, and will be 12 feet apart. On these are to be laid built-up girders of 2 x 14 inch stuff spiked together, and on them the floor joist, also 2 x 14. On the lower floor these joists will be only 4 inches apart, making with the bridging and double floor an almost solid floor 16 inches thick. On other floors the joists will be 3 x 14, and 9 inches apart. Between the thicknesses of the floors will be fire-proof asbestos.

All the inside work is so put in that there will not be a single hidden timber in the entire structure, a fact much affected by insurance men. Indeed so closely are the laws of insurance companies carried out by Messrs. Palmer & Hall that it is stated the insurance rate will be only about 0.6 per cent., a rate which will make most of our builders stare in surprise. As it is calculated that a stock of Iron and Hardware averaging between \$200,000 and \$300,000 will be kept on hand, this question of insurance is of no little importance.

There will be an oil-room outside the building and a boiler-room to furnish power for elevators and for heat in one corner. Offices for the company will be on the second floor, and there will be fire-proof vaults on both first and second floors. The entire building will contain a little over an acre of floor space, and

its entire height can be packed full of Shelf and Heavy Hardware without danger of collapse or strain. Contracts will probably be let in a few days, and the work of construction carried out this summer.

Exports.

PER BARK MARY A. GREENWOOD, MAY 28, 1889, FOR BRISBANE, QUEENSLAND.

By Recknagel & Co.—3 cases Washing-Machines. By Manning, Maxwell & Moore.—180 pounds Rail Saw, 18 pounds Iron Levers.

By Fairbanks & Co.—2631 pounds Scales, 1488 pounds Scales.

By McLean Bros & Rigg.—24 dozen Hatchets.

By Arnold, Cheney & Co.—745 Wash-Boards, 240 boxes Clothes-Pins.

By Healy & Earl.—13 boxes Slate, 6 boxes Iron Grates, 2 cases Forges.

By W. Warden & Sons.—15 cases Axe Handles.

By A. S. Lascelles & Co.—32 dozen Axes, 16 dozen Axes, 6 dozen Picks, 20 dozen Hatchets,

6 dozen Axes, 48 dozen Hatchets, 3 cases Hardware, 6 cases Scales, 11 dozen Wrenches,

1 bundle Trucks, 1 box Wheels, 17 cases Handles, 6 dozen Lemon-Squeezers, 8 cases

Tacks, 336 dozen Nails, 1 dozen Saws, 14 dozen Braces, 2 dozen Braces, 440 dozen Washita

Stone, 3 cases Hardware, 3 cases Grease, 50 gross Lead-Pencils, 1 case Velocipedes, 7 cases

Cartridges and Shells, 1 case Tobacco-Cutters.

By H. W. Peabody & Co.—11 crates Stoves, 3

packages Lamp-Ware, 1 case Hardware, 16

cases Wind-Mills and Parts, 57 packages

Carriage-Ware, 2 cases Agricultural Machinery, 10 cases Axles, 95 packages Hardware,

27 packages Barrows and Trucks, 1 case Sinks,

36 packages Refrigerators, 440 dozen Handles,

7 cases Hand-Carts, 177 packages Hardware,

54 crates Stoves, 4 cases Trucks, 45 bundles

Wash-Boards, 23 cases Lamp-Ware, 2 cases

Freezers, 11 packages Pumps, 13 crates Re-

frigerators, 4 cases Fire-Arms, 82 cases

Handles, 10 cases Trucks, 10 packages Wagons,

44 packages Carriage-Ware, 8 cases Perambulators, 6 cases Lamp-Ware, 2 cases Castings, 3

packages Agricultural Implements, 68 cases

Hardware, 17 cases Fire-Arms, 72 packages

Refrigerators.

By R. W. Forbes & Son.—40 packages Stoves,

40 dozen Picks, 8 packages Fruit Jars, 8 pack-

ages Fruit Jars, 50 dozen Axes, 25 gross Shade-

Rollers, 10 packages Hardware, 110 dozen

Picks, 13 packages Corn-Shellers, 40 dozen

Shovel Handles, 108 dozen Tool Handles, 4

cases Hardware, 15 gross Shade-Fasteners,

50 dozen Wash-Boards, 15 packages Hardware,

6 packages Shellers, 14 gross Shade-Rollers,

2 packages Plated-Ware, 5 packages Meat-

Choppers, 1 package Shade-Fasteners, 4 crates

Rake Handles, 2 dozen Snaths, 3 bundles

Tools, 3 dozen Forks, 3 dozen Rakes, 7 pack-

ages Hardware, 1 gross Shade-Rollers, 5 7-12

gross Fly-Traps, 3 packages Hardware, 3 racks

Churns, 2 gross Sewing-Machine Oil, 12 dozen

Hoes, 22 dozen Hatchets, 18 dozen Hoes, 5

gross Shade-Fasteners, 6 gross Pencils, 24

dozen Meat-Choppers, 14 packages Stoves,

500 feet Rubber Hose, 30 dozen Axes, 11 cases

Hardware, 9 gross Lead-Pencils, 5 gross Axe

Grease, 3 packages Plated-Ware, 1 box Lamp-

Ware, 1 package Plated-Ware, 1 case Store

Trucks, 248 dozen Axe-Handles, 8 dozen

Mouse-Traps, 10 dozen Axes, 4 dozen Ham-

mers, 27 packages Stoves, 4 gross Sewing-Ma-

chine Oil, 6 cases Meat-Choppers, 2 gross

Shade-Rollers, 6 dozen Wire Wash-Stands, 6

dozen Rakes, 37 dozen Fork Handles, 1 case

Pumps, 1 package Hat-Traps, 2 cases Hard-

ware, 10 dozen Axes, 5 sets Wheels, 36 dozen

Hoe Handles, 4 packages Windmills, 10 pack-

ages Stoves, 2 dozen Axes.

PER SCHOONER GELLERT, JUNE 4, 1889, FOR

FREEMANTLE, AUSTRALIA.

By R. W. Cameron & Co.—9 dozen Brooms, 50

boxes Clothes-Pins, 28 dozen Axes and Hatch-

ets, 20 dozen Picks, 386 dozen Handles, 15

packages Carriage-Ware, 12 Churns, 5 dozen

Rakes, 31½ dozen Fork and Hoe Handles, 6

dozen Hammers, 7 dozen Hardware, 3 dozen

Scales, 24 dozen Perambulators, 2032 pounds

Pumps, 108 pounds Guns and Cartridges, 6

cases Carriages, 5 boxes, Clocks, 11,246 pounds

Wire, 14 Wagons.

REVIEW OF THE WHOLESALE MARKET IN PAINTS AND OILS.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Paints and Colors.

National Lead Trust affairs continue to engage the attention of the trade, as well as the interest of speculators in "industrial" securities. The trade anxiously awaits the policy of the trust as regards prices, rebates, delivery points, &c., and, incidentally, the successful management of the business so that it may earn dividends upon the highly inflated capital. The

latter point, along with the manipulations of prices of certificates on the Stock Exchange, naturally is the one upon which speculative attention is focussed. For the present the plans of the White Lead Association prevail in the matter of prices and terms, and it is more than probable that these will not be departed from during the balance of this year. It is not denied that the Atlantic Company has been absorbed by the trust, nor do the Messrs. Colgate confirm the report that the deal for their property has been consummated. In fact, all persons directly interested are non-committal, but leave it to be presumed that the trust aggregation includes the Atlantic Company and now controls not less than 90 per cent. of the entire output of White Lead and by-products. Competent judges estimate the actual value of the total plant at about \$17,500,000, and the average profits of the several companies at 10 per cent., or \$1,750,000, last year. The amount of certificates outstanding is understood to be about \$70,000,000, face value, leaving \$52,500,000 to the account of "water." The statement is made that several companies joined the trust or sold their property to prominent members of the organization on a cash consideration equivalent to the actual value of their plant and N. L. T. certificates of face value to the same amount. That is to say, a \$100,000 establishment would be paid for in \$100,000 cash and certificates to a face value of \$100,000, against which the trust financiers issue \$400,000 in certificates for the benefit of the public. With certificates at 25 the actual cash payment is made good, and at the present price, say 30, a neat extra sum is secured. The estimated profits last year would pay about 2½ per cent. on the \$70,000,000 of real and fictitious capital. It may easily be figured out how nicely the thing is arranged for a large return to the members of the trust should only 2½ per cent. dividend on the par value of the certificates be paid. That Standard Oil policy will ultimately be brought into play for regulating prices, production, deliveries, &c., is a foregone conclusion, and it goes without saying that jobbers will fare no better in the future on this policy than they have under the plans of the White Lead Association.

White Lead and Zinc.—The volume of business in White Lead has been fair the past week and well up to the full average for the season, although present prices are high enough to encourage adulteration with Barytes and to enable makers of Red Mixed Paints to thrive. No changes have been made in prices or rebates.

American Zinc, White, has continued in very steady demand, and the situation is such that former prices are obtained with very little difficulty. Foreign Zinc has fairly held its own in the current sales, and prices and terms remain without change.

Colors.—In dry colors business has been rather slow, yet not more so than usual at this period. Prices show but little variation, and the conditions affecting values are not a great deal in contrast with what has been noted previously. The continued advance in the price of Quicksilver keeps Quicksilver Vermilion very firm, and an advance soon is considered probable. On other colors there is nothing apparent that suggests any radical variation in prices in the immediate future.

Linseed Oil.—The cost of Seed has continued high in both the American and the foreign markets and has advanced somewhat the past week. The high cost is due to the fact that supplies are moderate and likely to continue so the balance of the season. Very little Seed is being consigned to this section, and crushers are buying only such quantities as immediate wants necessitate. Hence the current production of Oil is kept down unusually close to the actual needs of the market, and the sup-

ply carried by producers has seldom if ever been as light as at the present time. Were it not for the employment of substitutes in some sources of consumption, and the use of adulterants, Linseed Oil would be a scarce article at the present time. As it is, city crushers are getting 60¢ for Raw and 63¢ for Boiled without the slightest difficulty. Very little outside Oil is coming this way, and that little goes quick at 58¢ @ 59¢ for Raw.

Miscellaneous.—Block Chalk continues rather weak, and \$2.50@\$2.75, as to position of supplies, are considered full prices for large lots Barytes find fairly active sale and are without notable change in prices. Paris White is steady and meeting with very fair sale. White continues rather weak, without, however, any radical change in prices. Talc and Terra Alba are barely steady at last week's prices and moving slowly.

Lord Oil.—City-pressed present make prime is freely offered at 54¢, and Western at 53½¢, for prompt delivery. On round lots for future delivery those prices would be shaded 1½¢ and probably 1¢. The figures named are high as compared with present cost of crude material, however, and large buyers are, therefore, doing very little in the Oil. The jobbing movement is of fully the average volume.

Cotton-Seed Oils.—The trust has recently shipped about 9000 barrels Refined Oil to Europe and is said to be negotiating the charter of a steamer to take 5000 barrels additional next month. This is merely in keeping with the Standard Oil policy of controlling the foreign markets by having full supplies at desirable points, leaving "independents" to struggle as best they can with the home trade outlet. The latter is extremely narrow at the present time and neither Crude nor Refined Oil can be marketed here in other than retail quantities except at a round concession on the prices asked.

Sperm Oil—Has undergone no further change the past week. Some transactions in the crude product are reported, but the prices were too high to admit of any further shading on the manufactured Oils. Crude sold at 65¢ in New Bedford.

Whale Oils.—About 500 barrels of Crude have been purchased in New Bedford by manufacturers; terms private. No further change has been made in prices for the manufactured Oils.

Menhaden Oils—Are still irregular and unsettled pending the initial results of the new fishing season. The manufactured products are quoted at practically the basis of 25¢ for Choice Crude.

Other Oils—Have undergone no change to speak of and the business throughout has continued to be of rather small volume.

Wholesale Prices.

NEW YORK, June 26, 1889.

Animal and Vegetable Oils.

Lined, City, raw.....	per gal	63	@	--
" " boliv.....		60	@	--
" Western, raw.....		58	@	59
Lard, City, Extra Winter.....		--	@	60
" " Prime, present make.....		54	@	--
" " Extra No. 1.....		47	@	50
" " No. 1.....		42	@	44
" Western, prime.....		58	@	--
Cotton-seed, Crude, prime.....		38	@	36
" " off grades.....		35	@	37
" Summer Yellow, prime.....		48	@	50
" " off grades.....		45	@	47
Sperm, Crude.....		60	@	58
" Natural Spring.....		68	@	70
" Bleached Spring.....		73	@	75
" Natural Winter.....		75	@	77
" Bleached Winter.....		80	@	82
Whale, Crude.....		--	@	--
" Natural Winter.....		--	@	46
" Bleached Winter.....		--	@	48
" Extra Bleached.....		49	@	50
See Elephant, Bleached Winter.....		54	@	55
Menhaden, Crude, Sound.....		25	@	27
" " Crude, Southern.....		22	@	25
" Light Pressed.....		32	@	33
" Bleached Winter.....		--	@	30
" Extra Bleached.....		--	@	30
Tallow, City, prime.....		--	@	49
" Western, prime.....		--	@	49
Cocoanut, Ceylon.....		55c	@	54c
" Cochin.....		65c	@	65c
Cod, Domestic.....		33	@	34
" Foreign.....		34	@	35
Red Lard.....		36	@	38
Ref Saponified.....		44c	@	51c

Bank.....	per gal	29	@	..
Straits.....		90	@	..
Olive, Italian, bbls.....		64	@	66
Neatsfoot, prime.....		62½	@	75
Palm, prime, Lagos.....		5½	@	..

Mineral Oils.

Black, 20 gravity, 25 @ 30 cold test, per gal	8	@	9
" " summer	7	15	20%
Cylinder, light, filtered	15	@	20
" dark,	14	@	20
" steam refined	10	@	18
Paraffine, 23½ @ 24 gravity	11	@	12
" 25	10	@	11
" 28	9	8½	@
" red, 21 @ 22 gravity	14	@	14½
" 22½ @ 23	12	@	13

Paints and Colors.

Barytes, Prime White.....	7 ton, \$16 ..	@	20 ..
" off-color	12.00	@	21 ..
Foreign Road.....	19	@	14 ..
Blue, Celestial.....	5 1/2 @	7 1/2	
" Chinese.....	45 @	50	
" Prussian.....	30 @	35	
" Ultramarine.....	7	@	25
Brown, Spanish.....	3	@	3 1/2
" Vandyke.....	3	@	3 1/2
" English.....	8	@	9 1/2
Black, American Drop.....	6	@	10
" English.....	12	@	14
" Frankfort.....	25	@	30
Black, Lamp, common.....	12	@	18
" medium.....	19	@	25
" prime.....	27	@	33
Carmine, No. 40, in bulk.....	3.10	@	..
" in boxes or barrels.....	3.20	@	..
" in ounce bottles.....	4.20	@	..
Chalk, in bulk.....	2.50	@	9.00
China Clay, English.....	13.50	@	18
" Southern.....	10.00	@	11.50
Cobalt Oxide, prep'd.....	2.90	@	..
" black..... lots 100m	2.80	@	..
" ".....	2.65	@	..
Crocus Martius, English.....	1 1/2 @	2 1/2	
" American.....	1 1/2 @	2 1/2	
Green, Paris, in bulk.....	20 @	..	
" 170 @ 175 p kegs.....	20 1/2 @	..	
" small packages.....	22 @	26 1/2	
Chrome, ordinary.....	8	@	11
" extra.....	12	@	13
" pure.....	22	@	25

REBATES, &c.—Paris Green.—Rebates to buyers of 500 to 1000 lb during season, $\frac{1}{2}\%$ & 2¢; to buyers of 1000 to 2000 lb, 1¢; to buyers of 2000 to 4000 lb, 1½¢; to buyers of 4000 to 10,000 lb, 2¢, to buyers of 10,000 lb and over 2½¢. Buyers of 5 tons or over at one time receive an additional $\frac{1}{2}\%$ & 2¢.

Lead, American White, dry.....	6½	⑤	7
" " in oil.....	7	⑥	7½
" " Red.....	6¾	④	7
Litharge, in barrels.....	6¼	④	..
" " 500-lb lots.....	7	⑤	..
" " smaller ".....	7¼	⑥	..

REBATES, &C.—White Lead. $\frac{1}{2}\%$ $\$$ $\frac{1}{2}$ rebate on purchases of 500 $\$$ and over, if paid for within 60 days of date of invoice; terms, 60 days or a discount of $2\frac{1}{2}\%$ if payment within 15 days from date of invoice. Extra rebate of $\frac{1}{2}\%$ $\$$ $\frac{1}{2}$, payable July 1 and December 31st to buyers of a total of 10 tons pure Lead during the year.

Litharge.—Rebate of $\frac{1}{4}\%$ for cash in 60 days and $2\frac{1}{4}\%$ additional for cash in 15 days.

Ocher, Rochelle.....	1.37½	1.55
" Bermuda Single-Washed.....	1¼	1¼
" " Double-Washed.....	1¼	1¼
" " Floated.....	1½	1½
Orange Mineral, English.....	8½	9½
" French.....	9	10
" German.....	8½	9
" American.....	8	8½
Paris White, English Cliffstone.....	1.00	1.10
" American.....	70	85
Red, Indian, English.....	5½	6
" American.....	9	14
Turkey.....	9	14
Tuscan.....	9½	11
Venetian.....	90	1.25
" English.....	1.00	1.47½
Sienna, Italian, Burnt and Powd. # 1.....	5	6½
" " Burnt Lumps.....	1¼	3½
" " Raw, Powd. lered.....	5	5½
" " Lumps.....	2	3
" American, Raw.....	1½	1½
" " Burnt and Powdered.....	1½	1½
Talc, French.....	1¼	1½
" American.....	1	1¼
Terra Alba, French..... per 100 lb	75	80
" English.....	80	85
" American No. 1.....	70	75
" American No. 2.....	38	40
Umbur, Turkey, Bnt. and Powd. # 1.....	3½	4
" Burnt. Lumps.....	2½	3
" Raw and Powdered.....	3½	4
" Raw Lumps.....	2½	2½
" Burnt, American.....	1½	1½
" Raw.....	1½	1½

Yellow, Chrome.....	10	@	25
Vermilion, American, Lead.....	11½	@	13
" Quicksilver.....	60	@	65
" English Imported.....	82	@	85
" Imitation English.....	8	@	25

"	Trieste...	75	6	77
"	Chinese.....	88	6	90
Whiting, Common.....	100	42½	6	47½
"	Gilders.....	55	6	60

Zinc, American, dry.....	4 1/2 @	4 1/2
" French, Red Seal.....	6 1/2 @	6 1/2
" " Green Seal.....	7 1/2 @	7 1/2
" " Antwerp.....	8 1/2 @	8 1/2
" " In Poppy Oil, G. Seal.....	10 1/2 @	10 1/2
" " In Poppy Oil, Red Seal.....	8 1/2 @	9 1/2
German, L. Z. O.....	5 1/2 @	6

DISCOUNTS.—French Zinc.—Discounts to buyers of 10-bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %; 50 bbls, 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese	35	40
" Prussian	20	45
" Ultramarine	12	18
Brown, Vandyke	7	12
Green, Chrome	7	13
" Paris	16	18½
Sienna, Raw	7	13
" Burnt	7	13
Umber, Raw	7	10
" Burnt	7	10

Glue.

Low Grade.....	8	10
Cabinet.....	12	14
Medium White.....	13	15
Extra.....	17	20
French.....	9	20
English.....	10	15
Irish.....	12	15

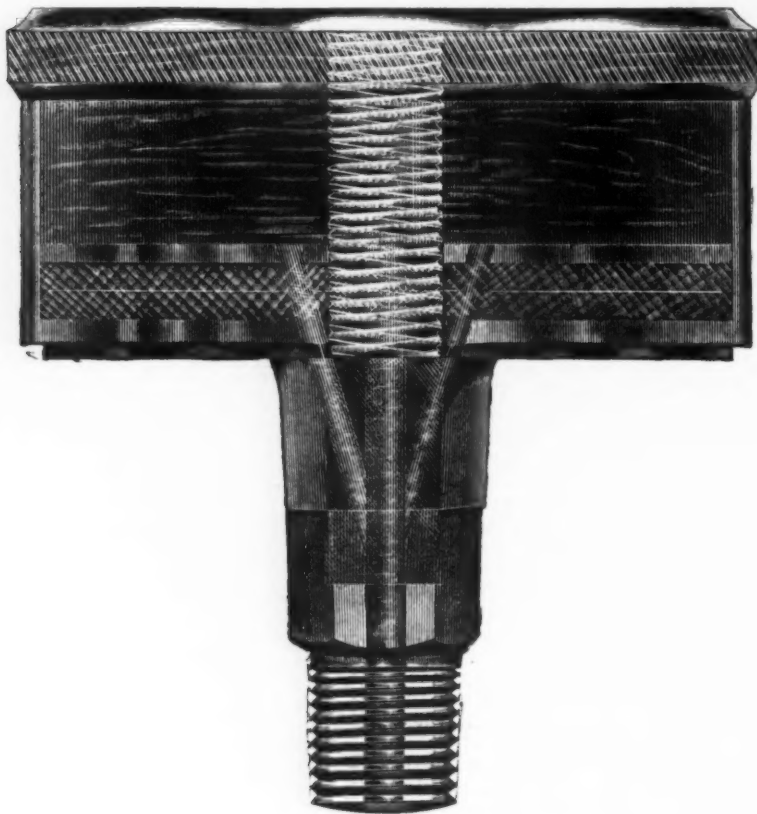
The Perfection Solid Oil-Box

The oil-box of which we herewith present an engraving is manufactured by Charles H. Besly & Co., of Chicago, Ill., expressly for the use of their Helmet oil. The box consists of a cap into the center of which is cast a screw fitting into a thread cut in the top of the lower part. The cap is filled with oil, which is forced into the oil groove and spread by the re-

two years, and it is said that they have not been touched during that time. They are as tight now as when first put on. This nut-lock is made by E. R. Procter, of Cincinnati, Ohio.

New Coat and Hat Hook.

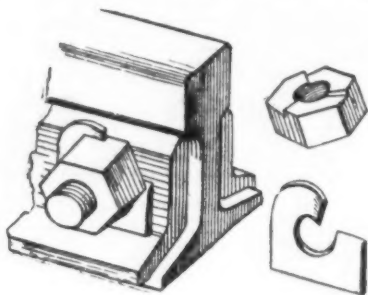
The accompanying illustration represents a new wire coat and hat hook which is put on the market by Sargent & Co.,

*The Perfection Solid Oil-Box.*

volving shaft by screwing the top down upon the lower part. The periphery of the lower part is filled with woven cotton packing, making a tight joint, preventing wear and protecting it from dust. The boxes can be applied in any position—from above, below or at the side, on loose pulleys, connecting-rods, bearings, &c. The box should fit snugly in the bearing, with the end placed about $\frac{1}{4}$ inch from the shaft.

Nut-Lock Washer.

This nut-lock consists of a ratchet-formed nut adapted to engage with a toothed washer of crucible steel. The

*Nut-Lock Washer.*

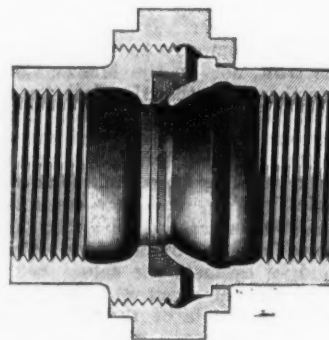
tooth formed by the washer locks squarely against the nut, which is shaped to receive it, so that the nut always remains tight. Screwing the nut down tight locks it. The first tried nut-locks of this pattern have been on the track one and a half and

gross. The illustration, without detailed description, shows the special features and manner of the hook's construction.

A cargo of copper ore from Montana via San Francisco arrived at this port last week, destined to France.

The Keystone Pipe-Joint.

The makers of this joint, Stanley G. Flagg & Co., of Philadelphia, Pa., claim that it makes a superior joint for radiator work and gives much better satisfaction

*The Keystone Pipe-Joint.*

than anything else yet made for the purpose, as it is not affected by the contraction and expansion to which other unions are liable. The form of the union is shown in the engraving. The seat formed in the head-piece by the concave soft-metal seat and in the tail-piece by the convex-finished surface is not damaged or injured by use, being as good after having been in use, taken down and put up again as when first put in. The soft-metal seat is pressed into an under-cut groove in the head-piece and expanded so that it cannot lose its position, but must remain firmly in place. The seat is made at any possible angle and can be loosened or tightened at pleasure without injury, standing without leaking 200 pounds steam-pressure. It is stated that these unions are used extensively in gas, steam and water pipe connections, and that they have been favorably indorsed by all who have used them.

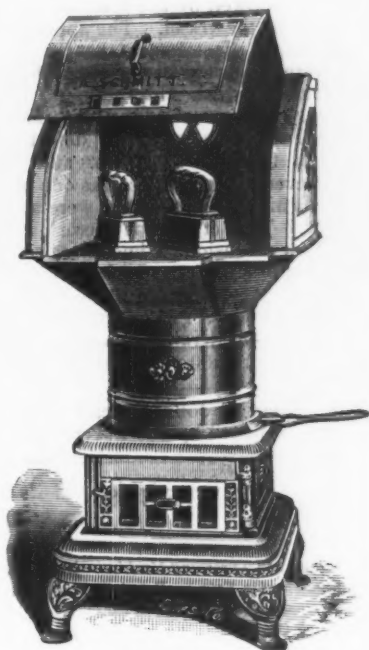
A letter from a gentleman who stands high in business and official circles in the City of Mexico states that, so far, the Mexican Government has given no intimation that it will appoint commissioners to the Congress of American States in October. President Diaz is doubtless vexed by the dilatoriness of the United States in

*New Coat and Hat Hook.*

promoting reciprocal relations, and may not deem it politic to manifest special anxiety on the subject. The Government has sought, rather, judging from surface indications, to show that the European market is as important to Mexico as any other.

Schmitt's Sad-Iron Heater.

By means of the accompanying illustration we present a smoothing and sad iron heater invented by Mr. Anselm Schmitt, of No. 850 Seneca street, Buffalo, N. Y. The object of the invention is the production of a stove particularly adapted for

*Schmitt's Sad-Iron Heater.*

heating flat and smoothing irons for laundry and tailors' use. The feature of construction is the plate on which the irons to be heated are placed. Double walls lined with asbestos are provided, within which are flues and ducts for the passage of the products of combustion. The construction is such that the heated gases are concentrated below the plate on which the irons

*Fig. 1.—Eureka Fruit-Pitter.*

rest and pass from beneath the middle portion through openings with which it is provided. The manufacturer states that in this manner the plate is always kept very hot, while but little heat is allowed to escape into the room. It can also be converted into a heating-stove in winter by removing the inside flues and asbestos lining. It is stated that fire can be kept in this stove without trouble day and night and that it is an easy matter to keep the

stove and surrounding floor free from dirt and ashes. The stove was patented April 30, 1889.

The Improved Eureka Fruit-Pitter.

This article, which is manufactured by Farnsworth & Co., San Francisco, Cal., for whom John H. Graham & Co. are agents, 113 Chambers street, New York, is illustrated in the accompanying en-

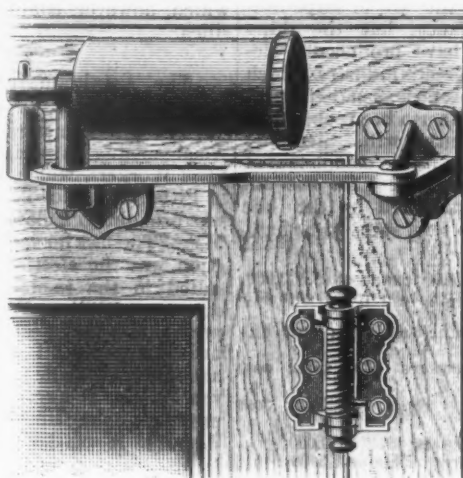
gravings, Fig. 1 giving a general view of the machine when not in use, and Fig. 2 showing the manner in which the pit is extracted from the fruit. It will thus be seen that this machine is attached to a table or other support in convenient position for use. The peach or other fruit is placed upon a rubber cushion, in which it rests, which has a hole in it through which the pit is forced. Connected with this cushion there is a knife which at the same time cuts the bottom of the peach and holds it in position until the cutter and extractor, which is operated by a handle, comes down upon it, simultaneously expelling the pit and cutting the fruit in

*Fig. 2.—Extraction of the Pit.*

two. The points made in regard to this tool are that it does not bruise the fruit and does its work perfectly and much more expeditiously than it can be done by hand. It is also stated that it can readily be adapted to work by foot-power if desired. It is intended for use with peaches, plums, apricots, nectarines, &c., and parties in ordering should specify what kind of fruit it is intended for. Unless ordered a plum-fitting cushion is not sent.

The Chic Screen-Door Check.

The use of door-checks has become so common that a door having a spring to shut it and without one of the several devices to prevent its slamming is a rare exception. So general has the spring and check been brought into use that the old "Shut the Door" signs, formerly so familiar on store doors, are now seen only as relics of former annoyances, and the

*The Chic Screen-Door Check.*

pictorial artists are devoting their leisure to more pleasing objects. Doing away with the slamming of ordinary doors has directed attention to the slamming of wire-screen doors as they are shut by the spring hinges so generally used. The door checks heretofore made have not usually been suitable for screen doors, and are too expensive if they were otherwise practicable, but the Chic Screen-Door Check illustrated herewith has been made especially for this purpose. Sargent & Co., the manufacturers, describe it as follows: The new patent Chic Screen-Door Check is suitable for either right or left hand without changing any of the parts; it is easily applied, and can be used with any screen-door spring or spring hinge. The pressure acts toward the hinges and holds the door firmly in position. The piston is inclosed within the cylinder to prevent the summer dust from interfering with its free working. It effectually prevents slamming and can be placed on any screen door. By screwing the cap at the end of cylinder the check can be instantly varied to suit the tension of the door-spring or spring hinges that may be used.

An extraordinary instance of long hours of labor was related recently before the Sweating Committee of the British House of Lords. A Roumanian Jew stated that at Manchester he works from 5 o'clock in the morning until 12 at night, and sometimes until 1 or 2 in the morning, making an average of 20 hours a day for six days in the week, leaving only four hours for sleep. He earned three shillings a day in the busy time, lasting about ten weeks, and from six shillings to eight shillings per week in the slack season, and on this he had to support a wife and children.

The Supreme Court of Ohio has pronounced the illegality of chattel mortgages and other methods to which insolvent debtors resort for the purpose of giving preferences to creditors on the eve of an assignment. The court decides that such preferences are void, and that the entire property of the assignor must be disposed of for the benefit of all the creditors.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., June 25, 1889.

The Government having fairly started in the building of new ships for the navy, the work may now be expected to go on more rapidly. The construction of steel ships of the intricate designs adapted to modern naval uses, offensive and defensive, was necessarily slow in the beginning, when this branch of the art of shipbuilding was in its infancy, but the ships already constructed have produced a development in this great industry which will lead to more expectations and effective results than have hitherto been obtained. The next few months will, therefore, witness great activity in the completion of plans and awarding contracts for the additional vessels authorized by the late Congress. The new steel ships to be built this year are:

One armed cruiser, 7500 tons; cost \$3,500,000.
One protected cruiser, 5300 tons; cost \$1,800,000.

Two protected cruisers, 3000 tons; cost \$1,100,000 each.

Three protected cruisers, 2000 tons; cost \$700,000 each.

One naval academy vessel, 800 tons; cost \$260,000.

Two gun-boats, 1000 tons; cost \$350,000.

One cruising monitor (Thomas), 3000 tons; cost \$1,500,000.

The contracts are being awarded as rapidly as the drawings and specifications are completed.

The vessels launched or ready to be launched are the 4000 to 4500 ton cruisers Philadelphia, Baltimore and Charlestown, and the gun-boats Yorktown, Concord and Bennington, each 1700 tons, and Petrel 800 tons. The great 6500-ton armored line-of-battle-ship Maine and armored cruiser Texas being constructed at the New York and Norfolk navy-yards are now fairly under way. Here are 20 of the finest vessels afloat of their class, which will be ready within from six months to two years. The cruisers Atlanta, Boston, Chicago and Dolphin are already in commission. The five reconstructed monitors will also add a formidable element of fighting strength.

The progress of the United States to the rank of a first-class naval power has not been confined to paper. The authorization of vessels by the new Congress will even be greater. From all indications, before the close of the present Administration the United States will have at least 50 of the finest types of modern vessels of war displaying the flag of the Republic in the seaports of the globe.

The Navy Department is in receipt of information that the shaft for the Philadelphia, building at the Cramp Yard, has been delivered. It is 65 feet long and 17 inches in diameter, or the largest piece of steel forging ever produced in the United States. It was the first work of the character turned out at the steel plant of the Bethlehem Iron Works, constructed under their contracts with the Government.

A PIG-IRON DECISION.

An appeal was recently made to the Treasury Department from the decision of the collector at Chicago assessing duty at the rate of $\frac{3}{16}$ cent per pound on certain imported ferro-silicon. The appellants claim that the article is not the pig-iron of commerce, but is a metal composed of iron and silicon and is used by iron manufacturers to melt with pig-iron, and that it is, therefore, entitled to entry at the rate of 20 per cent. ad valorem under the provision for "metal unwrought, not specially provided for." The appraiser reports that the article is ordinary pig-iron, containing about 10 per cent. of silicon, and is used in mixing with low grades of pig-iron to increase the percentage of silicon, thereby

strengthening the product, and that its value is about one-third more than ordinary pig-iron. The Department has decided that the fact that the article contains a larger proportion of silicon than ordinary pig-iron does not remove it from the category of pig-iron, and has affirmed the decision of the collector. That officer has been informed that the distinction between ferro-silicon and chrome pig-iron lies in the fact that chrome pig-iron is made from a combination of iron and chromic ores, while ferro-silicon is made from a single ore, which, however, contains both iron and silica.

The Amalgamated Association.

The fourteenth annual convention of the Amalgamated Association of Iron and Steel Workers, which has been in session in Pittsburgh since Tuesday, the 4th inst., was brought to a close on the night of the 21st. The last business before the association was the election of officers, and resulted in the re-election of all the old officers. William Weihe, who has been president of the association for six years, had announced all along that he would not allow his name to go before the convention for re-election, but was chosen president by acclamation, and after considerable persuasion he consented to serve for one more year at least. For the position of secretary there were two candidates, William Martin, the present incumbent, and Stephen Madden, the present assistant secretary. Mr. Martin was elected by a vote of 117 to 71 and Mr. Madden was elected assistant secretary. James Penney was elected treasurer without opposition. The convention then adjourned, to meet in Pittsburgh next June.

It is reported from Pittsburgh that the association granted the application of the bolt-makers for admission to the organization. This will necessitate a bolt-makers' scale. The general strike assessment measure suggested by the American Federation of Trades Unions, whereby all members of the federation are assessed in case of a strike in any of the trades unions, was adopted. An amendment was also passed permitting the admission of a large number of men about the mills who heretofore could not join the organization. Everybody who is employed about the mills can now be freely admitted, with the exception of common laborers. This latter question is left to the discretion of the local lodges to whom the laborers may apply for admission. The association, which has been so conservative, has finally reached out its arms and embraces every class of iron or steel workers. The change will make the Amalgamated Association a stronger competitor of the Knights of Labor for the membership of workmen who could join the Knights of Labor, but owing to the laws of the order could not join the Amalgamated Association.

It is now expected that there will be no strike or trouble of any kind in the Western iron industry this year, but a reduction in the steel mills is probable. The iron scale of wages in force during 1888-89 has been revised, and there are but few changes; in fact, the alterations made in most cases are favored by the manufacturers. It wipes out many objectionable features, and although some new clauses are inserted they are not of a serious character. A complete revision of the scale for nail-cutting was made, averaging a reduction of over 45 per cent.

We have received from Alex. Y. Lee, architect and civil engineer, Pittsburgh, a very fine lithographic sketch entitled "A Bird's-eye View of the Conemaugh Valley," giving the topographical characteristics of the section of country from Conemaugh Lake to Nineveh which was de-

vastated by the flood of May 31. Separate views are given of the South Fork Dam, the watershed of the lake, &c. Copies are for sale by the author.

The Secretary of the Navy has granted the request of the Union Iron Works, of San Francisco, who are building the cruiser Charleston, for an extension of four months in the time allowed by the contract for the completion of the vessel. The application was based upon the statement that the plans, which were purchased by the Navy Department from English ship-builders, were defective. In the case of the machinery it is alleged that the principal defect developed in the last trial trip, and that which prevented its success, was one of design, for which the contractors were not responsible. The other contractors whose requests for extension of time have been denied will appeal to Congress for relief. The extension granted will operate to remit the penalties for delay, which have already accrued in a considerable amount, having averaged about \$150 a day for some time.

The claims of John Roach's assignees are being adjusted by the Government.

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CURRENT HARDWARE PRICES.

JUNE 26, 1889.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Ammunition.

Caps, Percussion, 1000—
Hicks & Goldmark's
F. L. Waterproof, 1-10's.....30¢
E. B. Trimmed Edge, 1-10's.....25¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....74¢
Double Waterproof, 1-10's.....\$1.40
Musket Waterproof, 1-10's.....50¢
G. D.....38¢
S. B.....30¢

Union Metallic Cartridge Co.
F. C. Trimmed.....50¢
F. L. Ground.....25¢
Cent. Fire Ground.....70¢
Dbl. Waterproof.....\$1.40
Dbl. Waterproof, in 1-10's.....\$1.40
S. B. Genuine Imp.orted.....45¢
Eley's E. B.....54¢
Eley's D Waterproof, Central Fire.....\$1.00

Cartridges.
Rim Fire Cartridges.....50¢&52¢
Rim Fire Military.....52¢
Cent. Fire, Pistol and Rifle.....52¢&54¢
Cent. Fire, Military and Sporting.....54¢&56¢

Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.
Blank Cartridges, 22 cal., \$1.75.....2¢
Blank Cartridges, 32 cal., \$3.50.....2¢
Primed Shells and Bullets.....15¢&2¢
B. B. Caps, Round Ball, \$1.75.....2¢
B. B. Caps, Con. Ball, Swgd., \$2.00.....2¢

Primers—
Berdan Primers, \$1.00.....2¢
B. L. Caps (for Sturtevant Shells) \$1.00.....2¢
All other Primers, \$1.20.....2¢

Shells—
First quality, 4, 8, 10 and 12 gauge.....25¢&26¢
First quality, 14, 16 and 20 gauge (\$10 list).....30¢&32¢
Star, Club, Rival and Climax brands.....20¢&22¢
Seibold's Comb. Shot Shells.....15¢&2¢
Brass Shot Shells, 1st quality.....90¢&92¢
Brass Shot Shells, Club, Rival, Climax.....95¢&97¢
I X L, 10 and 12 gauge.....40¢&52¢
"Special," 16 gauge.....30¢&32¢
"Special," 10 and 12 gauge.....40¢&52¢
Fowler's Pat.....\$3.25

Shells Loaded—
A. M. Co. List No. 19, 1887.....40¢&40¢10¢

Wads—
U. M. C. & W. R. A.—B. E., 11 up, \$2.00.....2¢
U. M. C. & W. R. A.—B. E., 9&10, 2.30.....2¢
U. M. C. & W. R. A.—B. E., 7&8, 2.60.....2¢
U. M. C. & W. R. A.—P. E., 11 up, 3.10.....2¢
U. M. C. & W. R. A.—P. E., 9&10, 4.00.....2¢
U. M. C. & W. R. A.—P. E., 7&8, 4.90.....2¢
Eley's B. E., 11 up.....\$1.75
Eley's P. E., 11 up.....2.80

Anvils—
Eagle Anvils, 10¢.....20¢&20¢5¢
Peter Wright's.....94¢
Armstrong's Mouse Hole.....\$3.4¢
Armstrong's Mouse Hole, Extra.....\$1.15¢
Trenton.....9¢&9¢5¢
Wilkinson's.....9¢&10¢
J. & Riley Carr, Pat. Solid.....11¢&11¢5¢
Moore & Barnes Mfg. Co.....33¢&35¢

Anvil Vise and Drill—
Millers Falls Co., \$18.00.....20¢
Cheney Anvil and Vise.....25¢
Allen Anvil and Vise, \$3.00.....40¢&10¢

Apple Parers—

Advance.....\$ doz \$4.75
Antrim Combination.....\$ doz 5.50
Baldwin.....\$ doz 5.25
Champion.....\$ doz 7.25
Eureka, 1888.....each 17.00
Family Bay State.....\$ doz 12.00
Gem.....\$ doz 5.25
Gold Medal.....\$ doz 4.00
Daisy.....\$ doz 3.75
Ideal.....\$ doz 4.75
Improved Bay State.....\$ doz 30.00
Little Star.....\$ doz 4.00
Monarch.....\$ doz 13.50
New Lightning.....\$ doz 5.50
Oriole.....\$ doz 4.00
Penn.....\$ doz 4.00
Perfection.....\$ doz 4.00
Pomona.....\$ doz 4.00
Rocking Table.....\$ doz 5.25
Turntable.....\$ doz 4.50
Victor.....\$ doz 13.50
Waverly.....\$ doz 4.50
White Mountain.....\$ doz 4.50
72.....\$ doz 4.25
76.....\$ doz 5.75
78.....\$ doz 6.50

Augers and Bits—

Douglass Mfg. Co.....70¢
Wm. A. Ives & Co.....70¢
Humphreysville Mfg. Co.....70¢
French, Swift & Co. (F. H. Beecher)
Rockford Bit Company.....55¢
Cook's, Douglass Mfg. Co.....55¢
Cook's, N. H. Copper Co. 50¢&10¢&50¢&10¢
Ives' Circular Lip.....60¢
Patent Solid Head.....30¢
C. E. Jennings & Co., No. 10, extension lip.....40¢
C. E. Jennings & Co., No. 30.....60¢
C. E. Jennings & Co., Auger Bits, 3/8 set, 3/8 quarters, No. 5, 8; No. 30, \$3.50, 20¢
Lewis' Patent Single Twist.....25¢
Jennings' Augers and Bits.....25¢
Imitation Jennings' Bits.....60¢&60¢5¢
Fugh's Black.....20¢
Rockford, Jennings' Pattern.....60¢
Car Bits.....50¢&10¢&60¢
L. Hommedieu Car Bits.....15¢&10¢
Forstner Pat. Auger Bits.....10¢

Hollow Augers—

Ives'.....33¢
French, Swift & Co.....33¢&10¢
Douglass.....33¢&10¢
Bonney's Adjustable, \$ doz \$4.8.....40¢&10¢
Stearns'.....20¢&10¢
Ives' Expansive, each \$4.50.....50¢&5¢
Universal Expansive, each \$4.50.....20¢
Wood's.....25¢&25¢10¢

Expansive Bits—

Clark's small, \$18; large, \$26.....35¢&35¢5¢
Ives' No. 4, \$ doz \$80.....40¢
Swan's, No. 1, \$20; No. 2, \$22.....35¢
Stearns' No. 2, \$48.....20¢

Gimlet Bits—

Common.....\$ gross \$2.75 to \$3.25
Diamond.....\$ doz \$1.10.....25¢&10¢
Ree.....25¢&25¢5¢
Double Cut, Shephardson's.....45¢&45¢10¢
Double Cut, Ct. Valley Mfg. Co.....30¢&10¢
Double Cut, Hartwell's, \$ gro.....45¢
Double Cut, Douglass'.....40¢&10¢
Double Cut, Ives'.....30¢&30¢10¢

Bit Stock Drills—

Morse Twist Drills.....50¢&10¢5¢
Watrous.....50¢&10¢5¢
Cleveland.....50¢&10¢5¢
Syracuse, for metal.....50¢&10¢5¢
Syracuse, for wood (wood list).....30¢&30¢5¢
Williams' or Holt's, for metal.....50¢&10¢5¢
Williams' or Holt's, for wood.....40¢&10¢5¢

Ship Augers and Bits—

L'Hommedieu's.....15¢&10¢&15¢&10¢5¢
Watrous.....15¢&10¢&15¢&10¢5¢
Snell's.....15¢&10¢&15¢&10¢5¢
Snell's Ship Auger Pat'n Car Bits, 15¢&10¢&15¢&10¢5¢

Awl Hafts—
Sewing, Brass Fer. \$ gr \$3.50.....45¢&10¢
Pat. Sewing, Short, \$1.00 \$ doz.....40¢&10¢
Pat. Sewing, Long.....\$ doz \$1.20
Pat. Peg, Plain Top, \$ gr \$10.00.....45¢&10¢
Pat. Peg, Leather Top, \$ gr \$12.00.....45¢&10¢

Awls, Brad Sets, &c—

Awls, Sewing, Common \$ gr \$1.70, 35¢
Awls, Should. Peg \$ gr \$2.45, 40¢&40¢10¢
Awls, Pat. Peg.....\$ gr 63¢.....40¢&40¢10¢
Awls, Shouldered Brad, 2.70 \$ gr.....35¢
Awls, Handled Brad, \$7.50 \$ gr.....45¢
Awls, Handled Scratch \$ gr \$7.50, 35¢&10¢
Awls, Socket Scratch, \$ doz, \$1.50, 25¢&30¢

Awl and Tool Sets—

Alken's Sets, Awls and Tools, No. 20, \$ doz \$10.00.....55¢&10¢
Fray's Adj. Tool Hds., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9.....25¢&25¢10¢
Miller's Falls Adj. Tool Hds., Nos. 1, \$12; 2, \$18.....25¢
Henry's Combination Haft.....\$ doz \$6.50
Brad Sets, No. 42, \$10.50; No. 43, \$12.50, 70¢&10¢5¢
Stanley's Excelsior: No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50.....30¢&10¢

Axes—

Makers' and Special Brands—
First quality.....\$ doz \$6.00 to \$6.50
Others.....\$ doz \$5.50 to \$6.75

Axle Grease—

Fraser's.....Keg \$ 4¢, Pail \$ 5¢
Fraser's, in boxes.....\$ gr \$9.50
Dixon's Everlasting, in bxs., \$ doz 15¢
Dixon's Everlasting.....10¢ b pails, ea. 85¢
Lower grades, special brands, \$ gr \$5.50 to \$7.00

Axles—

No. 1.....4¢&4¢5¢, No. 2 5¢&5¢5¢
Nos. 7 to 14.....5¢&5¢
Nos. 15 to 18.....47¢
Nos. 19 to 22.....70¢
National Tubular Self-Oiling Standard Farm (1 to 5) and Special Farm (A1 to A5): Less than 10 sets.....33¢&5¢
Over 10 sets.....33¢&5¢

Bag Holders—

Sprenkle's Pat.....\$ doz \$18.....60¢

Balances—

Spring Balances.....50¢
Common 24-lb.....\$ doz \$1.50.....50¢
Chatillon's Spring Balances.....50¢
Chatillon's Circular Spring Balances.....60¢

Bells—

Hand—

Light Brass.....70¢&10¢ to 75¢
Extra Heavy.....60¢&10¢
White Metal.....60¢&10¢
Silver China.....53¢&10¢
Globe (Cone's Patent).....50¢&10¢35¢

Door—

Gong, Abbe's.....33¢&10¢
Gong, Yankee.....45¢&10¢
Gong, Barton's.....40¢&10¢50¢
Crank, Taylor's.....25¢&10¢
Crank Brooks'.....50¢&10¢25¢
Crank, Cone's.....10¢

Crank, Connel's.....20¢&10¢
Lever, Sargent's.....60¢&10¢
Lever, Taylor's Bronzed or Plated.....net
Lever, Taylor's Japanned.....25¢&10¢
Lever, R. E. M. Co.'s.....50¢&10¢25¢
Pull, Brook's.....50¢&10¢25¢
Pull, Western.....25¢&10¢

Cone—

Common Wrought.....60¢&10¢
Western, Sargent's list.....20¢&10¢
Kentucky, "Star".....20¢&10¢
Kentucky, Sargent's list.....70¢&10¢
Dodge, Genuine Kentucky.....70¢&10¢
Texas Star.....50¢&10¢50¢&10¢50¢
Call.....40¢&40¢55¢
Farm Bells.....\$ 3¢&3¢5¢
Steel Alloy Church and School Bells.....40¢

Bellows—

Blacksmiths'.....50¢&10¢5¢&60¢
Molders'.....40¢&40¢10¢
Hand Bellows.....40¢&10¢50¢

Beltin, Rubber—

Common Standard.....70¢&10¢
Standard.....70¢&10¢5¢
Extra.....60¢&5¢&60¢&10¢
N. Y. B. & P. Co., Carbon.....60¢&10¢5¢
N. Y. B. & P. Co., Diamond.....60¢&10¢

Bench Stops—

Morrill's.....\$ doz \$9, 50¢
Hotchkiss's.....\$ doz \$5, 10¢&10¢
Weston's, No. 1, \$10; No. 2, \$9, 25¢&10¢5¢
McGill's.....\$ doz \$3.....10¢

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—

Extension, Barber's, \$ doz \$15.00.....40¢&40¢10¢
Ives, \$ doz \$20.00.....60¢&5¢&60¢&10¢
Diagonal.....\$ doz \$24.00, 40¢
Angular.....\$ doz \$24.00, 40¢&5¢

Blind Adjusters—

Domestic.....\$ doz \$3.00, 33¢&5¢
Excelsior.....\$ doz \$10.00.....50¢&10¢25¢
Washburn's Self-Locking.....20¢&20¢10¢

Blind Fasteners—

MacKrell's, \$ doz \$1.00.....20¢&20¢10¢
Van Sand's Screw Pat., \$15 \$ gr.....60¢&10¢
Van Sand's Old Pat., \$15.00 \$ gr.....55¢&10¢
Washburn's Old Pattern, \$ gr.....\$0.00
Merriman's.....new list
Austin & Eddy No. 2008, \$ gr.....\$0.00
Security Gravity, \$ gr.....\$9.00

Blind Staples—

Barbed, 1/4 in. and larger.....\$ 7¢&8¢
Barbed, 3/4 in.....\$ 8¢&9¢

Blocks—

Ordinary Tackle, list May 20, 1889.....40¢&10¢50¢
Cleveland Block Co., Mal. Iron.....50¢
Moore's Novelty, Mal. Iron.....50¢

Bolts—

Door and Shutter—

Cast Iron Barrel, Square, &c.....70¢&70¢10¢
Cast Iron Shutter Bolts.....70¢&70¢10¢
Cast Iron Chain, Sargent's list.....65¢&10¢
Ives' Patent Door Bolts.....80¢
Wrought Barrel.....70¢&70¢10¢
Wrought Square.....70¢&70¢10¢
Wt'r Shutter, all Iron, Stanley's.....60¢&10¢
Wt'r Shutter, Brass Knob.....40¢&10¢
Wt'r Shutter, Sargent's list.....55¢&10¢
Wt'r Sunk Flush, Sargent's list.....55¢&10¢
Wt'r Sunk Flush, Stanley's list.....50¢&10¢
Wt'r B.K. Flush, Com'n.....55¢&10¢

Carriage, Machine, &c.—

Com. list June 10, '84.....75¢&10¢25¢
Genuine Eagle, list Oct., '84.....75¢&10¢
Phila. pattern, list Oct. 7, '84, 75¢&10¢5¢
R.B. & W., old list.....70¢
Machine, according to size.....75¢&10¢80¢
Bolt Ends, according to size.....75¢&10¢80¢

Tire—

Common, list Feb. 28, '83.....70¢
Port Chester Bolt and Nut Company.....70¢
Empire, list Feb. 28, '83.....70¢
Phila., list Oct. '84.....82¢
Keystone, Philadel., list Oct. '84.....80¢
Norway, Phila., list Oct. '84.....75¢&10¢
American Screw Company.....75¢&10¢
Norway, Phil., list Oct. 16, '84.....75¢&10¢
Eagle, Phil., list Oct. 16, '84.....82¢
Phila., list Oct. 16, '84.....82¢
Bay State, list Feb. 28, '83.....70¢
R.B. & W., Philadel., list Oct. 16, '84.....82¢

Stone and Plow—

Stone.....85¢
Plow.....60¢&5¢
R. B. & W., Plow.....55¢

Borax—

Without Augers.....\$ 9¢&10¢&5¢

Boring Machines—

Without Augers.....\$ 5.50 \$6.75.....50¢
Snell's, Rice's Pat. 5.50 6.75.....40¢&10¢10¢
Jennings.....5.50 6.75.....45¢&45¢10¢
Other Machines.....2.35 2.75.....net
Phillips' Patent with Augers.....00 7.50.....net

Bow Pins—

Humason, Beckley & Co.'s.....60¢&10¢
Sargent & Co.'s.....\$17 and \$18.....60¢&10¢
Peck, Stow & W. Co., 50¢&10¢&50¢&10¢5¢

Braces—

Barber's, Nos. 10 to 16.....50¢
Nos. 30 to 33.....50¢
Nos. 40 to 63.....50¢&10¢
Barker's, Nos. 8, 10 and 12.....75¢&10¢80¢
Plated, Nos. 8, 10 and 12.....85¢&10¢70¢
Osgood's Ratchet.....40¢&10¢50¢
Spofford's.....50¢&5¢&50¢&10¢
Ives' New Haven Novelty.....70¢&70¢10¢
New Haven Ratchet.....60¢&5¢&60¢&10¢
Barber Ratchet.....60¢&5¢&60¢&10¢
Barbers.....60¢&5¢
Spofford.....60¢&5¢&60¢&10¢
Common Ball, American.....\$1.00 to \$1.10
Bartholomew's, Nos. 25, 27 and 30.....50¢&10¢60¢&5¢
Nos. 117, 118, 119.....70¢&70¢5¢
Amidon's Barker's Imp'd Plain.....75¢&10¢80¢
Barker's Imp. Nickle.....65¢&10¢70¢
Ratchet.....75¢&10¢80¢
Eclipse Ratchet.....60¢
Globe Jawed.....40¢&40¢10¢
Corner Brace.....40¢&40¢10¢
Universal, 8 in., \$2.10; 10 in.....\$2.25
Buffalo Ball.....\$1.10 to \$1.15
P. S. & W.....50¢&10¢

Brackets—

Shelf plain, Sargent's list, 55¢&10¢55¢&10¢
Shelf, fancy, Sargent's list, 60¢&10¢60¢
Reading, plain.....50¢&10¢60¢&10¢5¢
Reading, Rosette.....60¢&10¢60¢&10¢10¢

Bright Wire Goods—

87¢

Broilers—

Hens' Self-Inch.....9 10 9x11
Basting, \$ Per doz.....\$4.50 5.50 6.50

Buckets—See Well Buckets and Pails.

Ball Rings—

Union Co. Nut.....55¢
Sargent's.....60¢&10¢70¢5¢
Hotchkiss' low list.....30¢
Humason, Beckley & Co.'s.....70¢
Peck, Stow & W. Co.'s.....50¢&10¢&50¢&10¢10¢
Elrich Hdw. Co., White Metal, low list.....50¢&50¢10¢

Butcher's Cleavers—

Bradley's.....25¢&30¢
L. & I. J. White.....20¢&5¢
Beatty's.....40¢&40¢5¢
New Haven Edge Tool Co.'s.....40¢
F. S. & W.....33¢&25¢&33¢&10¢
Foster Bros.....30¢
Schulte, Lohoff & Co.....40¢&40¢5¢

Butts—

Brass—

Wrought Brass.....75¢&75¢10¢
Cast Brass, Tiebout's.....33¢&5¢
Cast Brass, Corbin's, Fast.....33¢&10¢
Cast Brass, Loose Joint.....33¢&10¢

Cast Iron—

Fast Joint, Narrow.....50¢&10¢5¢&60¢&5¢
Fast Joint, Broad.....55¢&10¢5¢&60¢&10¢
Loose Joint.....70¢&10¢
Loose Joint, Japanned.....70¢&10¢
Loose Joint, Jap. with Acorns.....70¢&10¢
Parliament Butts.....70¢&10¢
Mayer's Hinges.....70¢&10¢
Loose Pin, Acorns.....70¢&10¢
Loose Pin, Acorns, Japanned.....70¢&10¢
Loose Pin, Acorns, Japanned, Plated Tips.....70¢&10¢

Wrought Steel—

Fast Joint, Narrow.....70¢&10¢
Fast Joint, Lt. Narrow.....70¢&10¢
Fast Joint, Broad.....70¢&10¢
Loose Joint, Broad.....70¢&10¢
Table Butts, Back Flaps, &c.....70¢&10¢
Inside Blind, Regular.....70¢&10¢
Inside Blind, Light.....70¢&10¢
Loose Pin.....70¢&10¢
Bronzed Wrought Butts.....50¢

Calipers—

See Compasses.

Calks, Toe—

Gautier.....\$ 5¢&6¢
Dewicks (Burke).....\$ 5¢&6¢

Can Openers—

Messenger's Comet.....\$ doz \$3.00, 25¢
American.....\$ gross \$3.00
Duplex.....\$ doz 25¢, 15¢&20¢
Lyman's.....\$ doz \$3.75, 20¢
No. 4 French.....\$ doz \$2.25, 50¢&60¢
No. 5, Iron Handle.....\$ gr \$6.00, 45¢&50¢
Eureka.....\$ doz \$2.50, 50¢
Sardine Scissors.....\$ doz \$2.75 to \$3.00
Star.....\$ doz \$2.75
Sprague, No. 1, \$2.00; 2, \$2.25; 3, \$2.50.....\$ doz \$2.50
World's Best, \$ gross, No. 1, \$12.00
No. 2, \$24.00; No. 3, \$36.00.....50¢&10¢
Universal, \$ doz \$3.00.....35¢&5¢
Domestic, \$ doz \$2.50.....45¢
Champion \$ doz \$2.00.....50¢

Freezers, Ice Cream—

Cards— Horse & Curry.....10¢10¢10¢10¢ Cotton.....10¢10¢10¢ Wool.....10¢10¢10¢	Cocks, Brans. Hardware list.....40.¢10¢2¢	Drilling Chucks— See Chucks.	Freezers, Ice Cream— Buffalo Champion.....60¢10¢5¢ Shepard's.....45¢5¢5¢ White Mountain.....50¢20¢5¢ New Arctic.....50¢40¢5¢ American.....60¢ Blizzard.....70¢ Double Action Crown.....70¢ Crown.....90¢ Star.....60¢ Peerless and Giant.....60¢10¢ Zero and Pet.....65¢10¢ Boss.....65¢10¢10¢
Carpet Stretchers— Cast Steel, Polished.....¢ doz \$2.25 Cast Iron, Steel Points.....¢ doz \$0.8¢ Sawed.....¢ doz \$1.75 Bulldozers.....25¢25¢10¢	Coffee Mills— Box and Side, List Jan. 1, 1888.....50¢2¢ American Enterprise Mfg Co.30¢10¢30¢ The Swift, Lane Bros.....30¢10¢	Dripping Pans— Smallest.....¢ doz 6¢4¢ Large sizes.....¢ doz 6¢4¢	Fry Pans— High List.....75¢5¢75¢10¢ No.....0 1 2 3 4 ¢ doz. \$3.75 \$4.70 \$5.30 \$5.95 \$6.55 No.....5 6 7 8 ¢ doz.....\$7.50 \$8.75 \$10.00 \$11.25 Low List.....65¢10¢ No.....1 2 3 4 ¢ doz.....\$3.00 \$3.75 \$4.25 \$4.75 \$5.25 No.....5 6 7 8 ¢ doz.....\$6.00 \$7.00 \$8.00 \$9.00
Carpet Sweepers— Bissell No. 5.....¢ doz \$17.00 Bissell No. 7, New Drop Pan.....¢ doz \$19.00 Bissell, Grand.....¢ doz \$36.00 Grand Rapids.....¢ doz \$24.00 Crown Jewel, No. 1, \$18.00; No. 2, \$19.00; No. 3, \$20.00 Maglo.....¢ doz \$16.00 Jewel.....¢ doz \$17.00 Imperial Parlor Queen, Nickel.....¢ doz \$27.00 Japanned.....¢ doz \$24.00 Excelsior.....¢ doz \$22.00 Garland.....¢ doz \$18.00 Arlor Queen.....¢ doz \$24.00 Queen.....¢ doz \$15.00 Queen, with band.....¢ doz \$18.00 King.....¢ doz \$30.00 Weed, Improved.....¢ doz \$18.00 Hub.....¢ doz \$16.00 Conqueror.....¢ doz \$22.00 Easy.....¢ doz \$22.00 Conqueror.....¢ doz \$22.00 Goshen.....¢ doz \$21.00 Advance.....¢ doz \$18.00 Ladies' Friend, No. 1, ¢ doz, \$15.00; No. 2, ¢ doz, \$16.00 American.....¢ doz \$15.00 Grand Republic.....¢ doz \$35.00	Compasses Dividers, &c— Compasses, Callipers, Dividers, 70¢70¢10¢ Bemis & Call Co.'s Dividers.....60¢5¢ Compasses & Callipers.....50¢5¢ Wing and Inside or Outside.....50¢5¢ Double.....60¢ (Call's Pat. Inside).....30¢ Excelsior.....50¢ J. Stevens & Co.'s.....25¢10¢ Starrett's Spring Callipers and Dividers 25¢10¢10¢ Lock Callipers and Dividers.....25¢10¢ Combination Dividers.....25¢10¢	Egg Beaters. Dover.....¢ doz \$1.50 National, ¢ doz \$4.50.....35¢4¢ Family (T. & S. Mfg. Co.), ¢ gro \$17.00¢ Duplex (Standard Co.).....¢ gro \$15.00 Rival (Standard Co.).....¢ gro \$12.00 Large Duplex (Standard Co.).....¢ gro \$4.50 Triumph (T. & S. Mfg. Co.), ¢ gro \$10.50 Advance, No. 1.....¢ gro \$10.50 Advance, No. 2.....¢ gro \$10.00 Bryant's Spiral.....¢ gro \$15.00 Ayres' Spiral.....¢ gro \$5.00 Double (H. & R. Mfg. Co.).....¢ gro \$16.20 Easy (H. & R. Mfg. Co.).....¢ gro \$14.00 Triple (H. & R. Mfg. Co.).....¢ gro \$16.20 Spiral (H. & R. Mfg. Co.).....¢ gro \$4.50 Faine, Diehl & Co.'s.....¢ gro \$24.00	Fruit and Jelly Presses— Enterprise Mfg. Co.....20¢10¢30¢ Hemis.....¢ doz \$2.50 Shepard's Queen City.....¢ doz \$4.00
Cartridges— See Ammunition.	Coopers' Tools— Bradley's.....20¢ Barton's.....20¢20¢25¢ L. & J. White.....20¢5¢ Albertson Mfg. Co.....25¢ Beatty's.....30¢ Sandy's Tool Co.....30¢30¢5¢	Egg Poachers— Buffalo Steam Egg Poachers, ¢ doz, No. 1, \$6.00; No. 2, \$9.00.....25¢ Electric Bell Sets.....20¢ Wellensak's.....20¢ Bigelow & Dowse.....20¢	Glue— Common Hemp Fuse, for dry ground, \$2.70 Common Cotton Fuse, for dry ground, 2.85 Single Taped Fuse, for wet ground, 4.25 Double Taped Fuse, for wet wet gr, 5.40 Triple Taped Fuse, for very wet gr, 6.50 Small Gutta Percha Fuse, for water, 7.50 Large Gutta Percha Fuse, for water, 12.00
Cast Steel, Polished.....¢ doz \$2.25 Cast Iron, Steel Points.....¢ doz \$0.8¢ Sawed.....¢ doz \$1.75 Bulldozers.....25¢25¢10¢	Corkscrews— Humason & Beckley Mfg. Co. 40¢40¢10¢ Clough's Pat.....35¢40¢33¢45¢ Hove Bros & Hulbert.....35¢	Electric Bell Sets.....20¢ Wellensak's.....20¢ Bigelow & Dowse.....20¢	Gauges— Marking, Mortise, &c.....60¢10¢ Starrett's Surface, Center and Scratch, 25¢10¢ Wire, low list.....10¢10¢ Wire, Wheeler, Madden & Co.....10¢ Wire, Morse's.....50¢25¢ Wire, Brown & Sharpe's.....10¢20¢
Carpet Sweepers— Bissell No. 5.....¢ doz \$17.00 Bissell No. 7, New Drop Pan.....¢ doz \$19.00 Bissell, Grand.....¢ doz \$36.00 Grand Rapids.....¢ doz \$24.00 Crown Jewel, No. 1, \$18.00; No. 2, \$19.00; No. 3, \$20.00 Maglo.....¢ doz \$16.00 Jewel.....¢ doz \$17.00 Imperial Parlor Queen, Nickel.....¢ doz \$27.00 Japanned.....¢ doz \$24.00 Excelsior.....¢ doz \$22.00 Garland.....¢ doz \$18.00 Arlor Queen.....¢ doz \$24.00 Queen.....¢ doz \$15.00 Queen, with band.....¢ doz \$18.00 King.....¢ doz \$30.00 Weed, Improved.....¢ doz \$18.00 Hub.....¢ doz \$16.00 Conqueror.....¢ doz \$22.00 Easy.....¢ doz \$22.00 Conqueror.....¢ doz \$22.00 Goshen.....¢ doz \$21.00 Advance.....¢ doz \$18.00 Ladies' Friend, No. 1, ¢ doz, \$15.00; No. 2, ¢ doz, \$16.00 American.....¢ doz \$15.00 Grand Republic.....¢ doz \$35.00	Cork Knives and Cutters— Bradley's.....10¢ Wadsworth's.....25¢	Enamelled and Tinned Ware— See Hollow-Ware.	Gimlets— Nail and Spike.....50¢10¢5¢ "Eureka" Gimlets.....40¢10¢ "Diamond" Gimlets.....¢ gr \$5.00 Double Cut, Shepardsons.....45¢45¢5¢ Double Cut, Ives.....60¢60¢5¢ Double Cut, Douglass.....40¢10¢ "Bee," ¢ gr \$12.....25¢25¢5¢
Cartridges— See Ammunition.	Cradles— Grain.....50¢2¢	Enamelled and Tinned Ware— See Hollow-Ware.	Glue Pots— The Page's Liquid.....25¢25¢5¢ Upton's Liquid.....35¢ The Page & Co.'s Improved Process.....25¢25¢5¢
Cast Steel, Polished.....¢ doz \$2.25 Cast Iron, Steel Points.....¢ doz \$0.8¢ Sawed.....¢ doz \$1.75 Bulldozers.....25¢25¢10¢	Crayons. White Crayons, ¢ gr 12¢@12¢4¢.....10¢ D. M. Stewart Mfg. Co., Metal Workers, ¢ gr, \$2.50.....25¢ D. M. Stewart Mfg. Co., Rolling Mill, ¢ gr, \$2.50.....25¢ See also Chalk.	Escutcheons. Door Lock.....Same as Door Locks. Brass Thread.....60¢60¢10¢ Wood.....25¢	Glue— Common Hemp Fuse, for dry ground, \$2.70 Common Cotton Fuse, for dry ground, 2.85 Single Taped Fuse, for wet ground, 4.25 Double Taped Fuse, for wet wet gr, 5.40 Triple Taped Fuse, for very wet gr, 6.50 Small Gutta Percha Fuse, for water, 7.50 Large Gutta Percha Fuse, for water, 12.00
Carpet Sweepers— Bissell No. 5.....¢ doz \$17.00 Bissell No. 7, New Drop Pan.....¢ doz \$19.00 Bissell, Grand.....¢ doz \$36.00 Grand Rapids.....¢ doz \$24.00 Crown Jewel, No. 1, \$18.00; No. 2, \$19.00; No. 3, \$20.00 Maglo.....¢ doz \$16.00 Jewel.....¢ doz \$17.00 Imperial Parlor Queen, Nickel.....¢ doz \$27.00 Japanned.....¢ doz \$24.00 Excelsior.....¢ doz \$22.00 Garland.....¢ doz \$18.00 Arlor Queen.....¢ doz \$24.00 Queen.....¢ doz \$15.00 Queen, with band.....¢ doz \$18.00 King.....¢ doz \$30.00 Weed, Improved.....¢ doz \$18.00 Hub.....¢ doz \$16.00 Conqueror.....¢ doz \$22.00 Easy.....¢ doz \$22.00 Conqueror.....¢ doz \$22.00 Goshen.....¢ doz \$21.00 Advance.....¢ doz \$18.00 Ladies' Friend, No. 1, ¢ doz, \$15.00; No. 2, ¢ doz, \$16.00 American.....¢ doz \$15.00 Grand Republic.....¢ doz \$35.00	Crown Bars— Cast Steel.....¢ doz 3¢4¢ Iron, Steel Points.....¢ doz 3¢4¢	Escutcheons. Door Lock.....Same as Door Locks. Brass Thread.....60¢60¢10¢ Wood.....25¢	Glue— Common Hemp Fuse, for dry ground, \$2.70 Common Cotton Fuse, for dry ground, 2.85 Single Taped Fuse, for wet ground, 4.25 Double Taped Fuse, for wet wet gr, 5.40 Triple Taped Fuse, for very wet gr, 6.50 Small Gutta Percha Fuse, for water,

Molasses Gates—	
Stebbin's Pat.	70¢@70¢7½¢
Stebbin's Genuine	60¢@10¢10½
Stebbin's Tinned Ends	40¢@10½
Chase's Hard Metal	50¢@10½
Bush's	20¢
Lincoln's Pattern	70¢@70¢10
Weed's	20¢@10½
Boss, 2 doz;	
Nos. 1, 2; No. 2, 3; No. 3, 4; No. 4	10¢
Money Drawers—	
1 doz, \$18; 2 doz, \$20	
Muzzles—	
Safety—	1 doz, \$3.00, 25¢
Nails, see Trade Report.	
Wire Nails, Papered.	
Card June 1, '89, base—	\$2.40 @ \$2.50
Tack Mfrs.' list—	70¢@10½
Wire Nails, Standard Penny.	
Card June 1, '89, base—	\$2.40 @ \$2.50
Nail Puller—	
Curtiss Hammer—	1 doz \$9.00
Giant, No. 1—	1 doz \$30.00, 10¢
Pelican—	1 doz \$30.00, 25¢
Boss—	1 doz \$30.00, 30¢
Lighting—	1 doz \$21.00
Nail Sets—	
Square—	1 gr, \$4.00 @ \$4.25
Round—	1 gr, \$3.25
Cannon's Diamond Point—	1 gr, \$12.20
Nut Crackers—	
Table (H. & B. Mfg. Co.)—	40¢
Blake's Pattern—	1 doz \$2.00, 10¢
Turner & Seymour Mfg. Co.—	50¢
Nuts—	
Nuts, off list Jan. 1, 1888: Square, Hex.	
Hot Pressed—	5.4¢ 5.9¢
Cold Punched—	5.4¢ 5.5¢
In lots less than 100 lb, 1 lb, add 1¢; 1-b	
boxes, add 1¢ to list.	
Oakum—	
Government—	1 lb 7½¢ @ 8¢
U. S. Navy—	1 lb 6½¢ @ 7¢
Navy—	1 lb 5½¢ @ 6½¢
Oilers—	
Zinc and Tin—	65¢@65¢10½
Brass and Copper—	50¢@10¢50¢10½
Malleable, Hammers, Improved, No. 1.	\$3.00; No. 2, \$4.00; No. 3, \$4.40 1 doz.
10¢@10½10	
Malleable, Hammers, Old Pattern, same	
list—	40¢
Prior's Pat. or "Paragon" Zinc—	60¢@10¢10½
Prior's Pat. or "Paragon" Brass—	50¢
Olmead's Tin and Zinc—	60¢
Olmead's Brass and Copper—	50¢
Broughton's Zinc—	60¢
Broughton's Brass—	50¢
Packing, Steam—	
Rubber—	
Standard—	80¢@10¢60¢10½10
Extra—	50¢@10¢60¢
N. Y. B. & P. Co., Standard—	50¢@10¢55¢
N. Y. B. & P. Co., Empire—	70¢
N. Y. B. & P. Co., Salamander—	70¢
Jenkins' Standard—	1 lb 65¢, 30¢
1 lb 80¢, 35¢	
Miscellaneous—	
American Packing—	10¢@11¢ 1 lb
Russia Packing—	14¢ 1 lb
Italian Packing—	13¢@14¢ 1 lb
Cotton Packing—	15¢@17¢ 1 lb
Jute—	7¢@8¢ 1 lb
Padlocks—	
See Locks.	
Pails—	
Galvanized Iron—	
Quarts—	10 12 14
Hill's Light Weight, 1 doz.	\$2.75 3.00 3.25
Hill's Heavy Weight, 1 doz.	3.00 3.25 3.75
Whitling's—	2.75 3.00 3.25
Sidney Shephard & Co.—	2.80 3.00 3.40
Iron Clad—	2.75 3.00 3.25
Fire Buckets—	2.75 3.25 3.50
Buckets, see Well Buckets.	
Indurated Fibre Ware—	
Star Pails, 12 qt., per doz.	\$4.00 \$4.50
Fire, Stable and Milk, 14 qt.	1 doz \$4.50
Standard Fibre Ware—	
Plain, Dec'd	
Water Pails, 12 qt., per doz.	\$4.00 \$4.50
Dairy Pails, 14 qt., per doz.	4.50 5.00
Fire Pails, No. 1, 12 qt., per doz.	5.00
Fire Pails, No. 2, 14 qt., per doz.	4.50
Pencils—	
Faber's Carpenters'—	high list 50¢
Faber's Round Gilt—	1 gr \$5.25
Dixon's Lead—	1 gr \$4.50
Dixon's Lumber—	1 gr \$6.75
Dixon's Carpenters'—	40¢@10½
Picks—	
Railroad or Adze Eye, 5 to 6, \$12.00;	
6 to 7, \$13.00—	50¢@10¢55¢ @ 60¢
Picture Nails—	
Brass Head, Sargent's list—	50¢@10¢10½
Brass Head, Combination list—	50¢@10½
Porcelain Head, Sargent's list—	50¢@10¢10½
Porcelain Head, Combination list—	40¢@10½
Niles' Patent—	40¢
Pinking Irons—	
1 doz 65¢ net	
Pipe, Wrought Iron—	
List March 23, 1887.	
1½ and under, Plain—	52½¢
1½ and under, Galvanized—	45¢
1½ and over, Plain—	65¢
1½ and over, Galvanized—	52½¢
Boiler Tubes, Iron—	
1½ and under—	55¢
2 in. and larger—	60¢
Planes and Plane Irons—	
Wood Planes—	
Molding—	50¢@55¢50¢10½
Bench, First Quality—	60¢@60¢55¢
Bench, Second Quality—	60¢@10¢60¢10½
Bailey's (Stanley R. & L. Co.)—	40¢@10½
Iron Planes—	
Bailey's (Stanley R. & L. Co.)—	40¢@10½
Miscellaneous Planes (Stanley R. & L. Co.)	20¢@10½
Victor Planes (Stanley R. & L. Co.)—	20¢@10½
Steer's Iron Planes—	35¢@35¢55¢
Meriden Mfg. Co.'s—	30¢@10¢30¢10½10
Davis's Iron Planes—	30¢@10¢30¢10½10

Birmingham Plane Co.—	50¢@50¢55¢
Gage Tool Co.'s Self-Setting—	20¢@10½
Chaplin's Iron Planes—	40¢@40¢55¢
Sargent's—	30¢@10¢30¢10½10
Plane Irons—	
Plane Irons, Butcher's—	20¢@10½
Plane Irons, Buck Bros—	30¢
Plane Irons, Auburn Tool Co., "This	
the"—	40¢
Sandusky Tool Co.—	40¢
Single and Cut—	30¢
Double—	40¢
L. & J. J. White—	25¢
Pliers and Nippers—	
Button's Patent—	30¢@10¢40¢
Hall's No. 2, 5 in., \$13.50; No. 4, 7 in.	\$21.00 1 doz
Rumason & Beckley Mfg. Co.—	50¢@50¢10½
Gas Pliers—	60¢
Gas Pliers, Custer's Nickel Plated—	60¢@55¢
Eureka Pliers and Nippers—	40¢
Russell's Parallel—	25¢
P. S. & W. Cast Steel—	50¢
P. S. & W. Tinner's Cutting Nippers—	50¢
Carew's Pat. Wire Cutters—	add 5¢ dis 10¢
Morrill's Parallel, 1 doz, \$12.00—	30¢@55¢
Cronk's 8 in., \$15.00; 10 in., \$21.00—	40¢@40¢55¢
Plumbs and Levels—	
Regular List—	70¢@10¢70¢10½10
Diston's—	70¢@10¢70¢10½10
Pocket Levels—	70¢@10¢70¢10½10
Davis Iron Levels—	30¢
Davis Inclometers—	10¢@10½
Polish, Metal.	
Prestoline—	20¢@10½
Krestoline Paste—	30¢@55¢
Gaston's Silver Compound—	30¢@55¢
Pokes, Animal—	
Bishop's I. X. L.—	1 doz \$6.50
Bishop's O. K.—	1 doz \$5.50
Bishop's Pioneer—	1 doz \$3.75
Bishop's American—	1 doz \$3.00
Poppers, Corn—	
Round or Square, 1 qt.—	1 gr \$12.00 @ 15.00
Round or Square, 2 qt.—	1 gr \$25.00 @ 26.00
Post Hole and Tree Augers	
and Diggers—	
Samson Post Hole Digger, 1 doz \$36.00—	25¢@10½
Fletcher Post Hole Augers, 1 doz \$30, 20¢	
Eureka Diggers—	1 doz \$16.00 @ 17.00
Leed's—	1 doz \$8.00 @ 9.00
Vaughan's Post Hole Auger—	1 doz \$13.00 @ 14.00
Kohler's Little Giant—	1 doz \$18.00
Kohler's Hercules—	1 doz \$15.00
Kohler's New Champion—	1 doz \$18.00
Schneider—	1 doz \$9.00
Ryan's Post Hole Diggers—	1 doz \$24.00
Cronk's Post Bars—	1 doz \$60.00, 50¢
Gibbs Post Hole Digger, 1 doz \$30.00, 50¢	
Imperial, 1 doz, \$15—	45¢
Potato Parers—	
White Mountain—	1 doz \$5.00 @ 5.50
Antrim Combination—	1 doz \$8.00
Hoosier—	1 doz \$13.50
Pruning Hooks and Shears—	
Diston's Combined Pruning Hook and	
Saw—	1 doz \$18.00, 20¢@10½
Diston's Pruning Hook, 1 doz \$12.00—	20¢@10½
E. S. Lee & Co.'s Pruning Tools—	40¢
Pruning Shears, Henry's Pat., 1 doz	\$3.75 @ 4.00 net
Henry's Pruning Shears, 1 doz \$4—	4.50 net
Wheeler, M. & C. Co.'s Combination—	1 doz \$12.00, 20¢
Dunlap's Saw and Chisel—	1 doz \$8.50, 30¢
J. Mallinson & Co., No. 1, \$5.25; No. 2, 7.25	
Pulleys—	
Hot House, A. W. & Co.—	60¢@10½
Japanned Screw—	60¢@10½
Brass Screw—	60¢@10½
Japanned Slide—	60¢@10½
Japanned Clothes Line—	60¢@10½
Empire Sash Pulley—	55¢@60¢
Moore's Sash, Anti-Friction—	50¢
Hay Fork, Solid Eye, \$4.00; Swivel,	
\$4.50—	50¢@10¢50¢10½10
Hay Fork, "Anti-Friction," 5 in. Solid,	
\$5.70—	50¢
Hay Fork, "P" Common and Pat.	
Bushed—	20¢
Hay Fork, Tarbox Pat. Iron—	20¢
Hay Fork, Reed's Self-Lubricating—	20¢
Shade Rack—	See Blocks
Tackle Blocks—	See Blocks
Moore's Anti-Friction 5 in. Wheel, 1 doz	\$12.00—
40¢	
Pumps—	
Clarn, Best Makers—	50¢@10¢60¢
Pitcher Spout, Best Makers—	60¢@10¢60¢
10¢@10½	
Pitcher Spout, Cheaper Goods—	70¢@55¢
70¢@10½	
Punches—	
Saddlers' or Drive, good, 1 doz—	60¢@65¢
Bemis & Call Co.'s Cast Steel Drive—	50¢@55¢
Bemis & Call Co.'s Springfield Socket—	50¢@55¢
Spring, good quality—	1 doz \$2.50 @ 2.60
Spring, Leach's Pat.—	15¢
Bemis & Call Co.'s Spring and Check—	40¢
Solid Tinner's—	1 doz \$1.44, 55¢
Tinner's Hollow Punches—	15¢
Rice Hand Punches—	15¢
Avery's Revolving—	40¢
Avery's Saw-Set and Punch. See Saw Sets.	
Rail—	
Sliding Door, Wrt't Brass, 1 lb 35¢—	15¢
Sliding Door, Bronzed Wrt't Iron, 1 lb, 7¢	
Sliding Door, Iron, Painted, 1 foot 4, 40¢	
Barn Door, Light In.—	1 3/4 3/4
Per 100 feet—	\$2.00 2.50 3.10, 10¢
B. D. for N. E. Hangers—	
Small, Med. Large.	
Per 100 feet—	\$2.15 2.70 3.25, net
Terry's Wrought Iron, 7¢ foot—	44¢@55¢
Victor Track Rail, 7¢ foot—	50¢@55¢
Carrier Steel Rail, 7¢ foot—	44¢
Moore's Wrought Iron—	25¢
Rakes—	
Cast Steel, Association goods—	65¢
Cast Steel, outside goods—	60¢@10¢70¢
Malleable—	70¢@70¢55¢
Gibbs Lawn Rake—	\$12.00, 50¢@15¢
Cannon Lawn Rake—	\$8.00, 50¢@10½
Ft. Madison Prize Bow Brace and Peer-	
less—	30¢@10¢30¢10½10

Fort Madison Steel Tooth Lawn Rake, \$6.00—	25¢	
Razors—		
J. R. Torrey Razor Co.....	20¢	
Westonholme and Butcher, \$10.00 to 2, 10¢		
Razor Straps—		
Genuine Emerson.....	60¢@60¢55¢	
Initiation " " doz \$2.00, 20¢@10½55¢		
Torrey's.....	20¢	
Badger's Belt and Com.....	1 doz \$2.00	
Lamont Combination.....	1 doz \$4.00	
Rivets and Burrs—		
Iron, list Nov. 17, '87.....	50¢	
Copper.....	50¢@10¢60¢	
Rivet Sets.....		50¢@10½
Rods—		
Stair, Brass.....	25¢@25¢	
Stair, Black Walnut.....	1 doz 40¢	
Rollers—		
Barn Door, Sargent's list.....	60¢@10¢10½	
Acme Moore's Anti-Friction.....	55¢	
Union Barn Door Roller.....	70¢	
Rope—		
Manufacturers' prices for large lots:		
Manila, ¼ in. and larger.....	1 lb 15¢	
Manila..... ¾ in.....	1 lb 16½¢	
Manila..... 1 and 5-16 in.....	1 lb 16½¢	
Manila Tarred Rope.....	1 lb 15½¢	
Manila, Hay Rope.....	1 lb 15½¢	
Sisal, ½ inch and larger.....	1 lb 13½¢	
Sisal..... ¾ in.....	1 lb 13½¢	
Sisal..... 1 and 5-16 in.....	1 lb 13½¢	
Sisal, Hay Rope.....	1 lb 12½¢	
Sisal, Tarred Rope.....	1 lb 12½¢	
Sisal, Medium Lathe Yarn.....	1 lb 11½¢	
Cotton Rope.....	1 lb 15¢@18¢ net	
Jute Rope.....	1 lb 8¢	
Rules—		
Boxwood..... 80¢@10¢10½@80¢10¢10½55¢		
Ivory.....	50¢@50¢10½	
Starrett's Rules and Straight Edges.....	25¢@10½	
Steel.....	25¢@10½	
Sad Irons—		
From 4 to 10, at factory.....	100 lb	
Self-Heating.....	\$2.40 @ \$2.55	
Self-Heating, Tailors'.....	1 doz \$9.00 net	
Self-Heating, Tailors'.....	1 doz \$18.00 net	
Gleason's Shield and Toilet.....	25¢	
Mrs. Pott's Irons.....	40¢@40¢10½	
Enterprise Star Irons.....	40¢	
Combined Fluter and Sad Iron, 1 doz,		
\$15.00—	15¢	
Fox Reversible, Self-Fluter.....	1 doz \$24.00	
Chinese Laundry (N.E. Butt Co.).....	8½¢, 15¢	
New England.....	5¢, 15¢	
Mahony's Troy Pol. Irons.....	25¢	
Sensible.....	20¢@20¢55¢	
National Self-Heating.....	30¢	
Sand and Emery Paper and Cloth—		
List April 19, 1888.....	50¢@50¢10½	
Sibley's Emery and Crocus Cloth.....	30¢	
Sash Cord—		
Common.....	1 lb, 10¢@11¢	
Patent, good quality.....	1 lb 13¢@13½¢	
White Cotton Braided, fair.....	1 lb 28¢@29¢	
Common Russia Sash.....	1 lb 13¢	
Patent.....	1 lb 15¢	
Cable Laid Italian Sash.....	1 lb 22¢@23¢	
India Cable Laid ".....	1 lb 13¢	
Silver Lake—		
A Quality, White, 50¢.....	10¢@10½55¢	
A Quality, Drab, 50¢.....	10¢@10½55¢	
B Quality, White, 50¢.....	20¢@10½55¢	
B Quality, Drab, 50¢.....	20¢@10½55¢	
C Quality, White (only).....	28½¢@28¢	
Sylvan Spring, Extra Braided, White, 34¢		
Sylvan Spring, Extra Braided, Drab.....	39¢	
Semper Idem, Braided, White.....	80¢	
Egyptian, India Hemp, Braided.....	25¢	
Samson—		
Braided, White Cotton, 50¢.....	30¢@30¢55¢	
Braided, Drab Cotton, 50¢.....	30¢@30¢55¢	
Braided, Italian Hemp, 50¢.....	30¢@30¢55¢	
Braided, Linen, 80¢.....	30¢@30¢55¢	
Sash Locks—		
Clark's, No. 1, \$10; No. 2, \$8 ½ gr.....	33½¢	
Ferguson's.....	33½¢	
Morris and Triumph, list Aug. 16, 1886.....	60¢@25¢	
Victor.....	60¢@10¢25¢	
Walker's.....	10¢	
Attwell Mfg. Co.....	25¢@33½¢	
Reading.....	60¢@10¢60¢@10¢10½	
Hammond's Window Springs.....	40¢	
Common Sense, Jap'd, Cop'd and		
Br'ed.....	1 gr \$4.00	
Common Sense, Nickel Plated.....	1 gr \$10.00	
Universal.....	80¢	
Kempshall's Gravity.....	60¢	
Kempshall's Model.....	80¢@60¢10½	
Corbin's Daisy, list Feb. 15, 1888.....	70¢	
Payson's Perfect.....	60¢@60¢10½	
Hugunin's Sash Balances.....	25¢@55¢25¢	
Hugunin's New Sash Locks.....	25¢@55¢25¢	
Stoddard "Practical".....	10¢	
Ives' Patent.....	60¢@60¢10½	
Liesche's, Nos. 100 and 110, 1 gr \$8;		
105, \$10.00—	20¢@10½	
Davis, Bronze, Barnes Mfg. Co.....	60¢	
Champion Safety, list March 1, 1888.....	55¢@55¢55¢	
Security.....	70¢	
Buckeye.....	1 gr \$4.80	
Sack Weights—		
Solid Eyes.....	1 ton \$22.00	
Sausage Stuffers or Fillers—		
Milas "Challenge," 1 doz \$20, 50¢@50¢55¢		
Perry.....	1 doz, No. 1, \$15.00; No. 0,	
\$21.00—	50¢@50¢55¢	
Draw Cut No. 4, each \$30.00.....	20¢	
Enterprise Mfg. Co.....	20¢@10¢30¢	
Silver's.....	40¢@10½	
Saws—		
Diston's Circular..... 46¢@45¢55¢	} Extras some- times given by jobbers.	
Diston's Cross Cuts..... 45¢@45¢55¢		
Diston's Hand 26¢@26¢55¢		
Atkins' Circular Saws and Heading		
	50¢@10	

Machine—

Flat Head, Iron.....55¢
Round Head, Iron.....60¢

Bench and Hand—

Bench, Iron.....55¢10¢55¢10¢10¢
Bench, Wood.....55¢10¢55¢10¢10¢
Bench, Wood, Hickory.....20¢10¢
Hand, Wood.....25¢10¢25¢10¢55¢
Lag, Blunt Point.....75¢75¢10¢
Coach and Lag, Gimlet Point.....75¢
Bed.....25¢55¢
Hand Rail, Sargent's.....60¢10¢10¢
Hand Rail, H. & B. Mfg. Co.....70¢10¢75¢
Hand Rail, Am. Screw Co.....75¢
Jack Screws, Millers Falls list.....50¢50¢55¢
Jack Screws, P. S. & W.....35¢
Jack Screws, Sargent.....60¢10¢60¢10¢55¢
Jack Screws, Stearns.....10¢60¢10¢

Scroll Saws—

Lester, complete, \$10.00.....25¢
Rogers, complete, \$4.00.....25¢
Barnes' Builders' and Cabinet Makers'.....25¢
Barnes' Scroll Saw Blades.....35¢

Seythe Snaths.....50¢25¢

Shears—

American (Cast) Iron.....75¢10¢75¢10¢55¢
Pruning, See Pruning Hooks and Shears.
Barnard's Lamp Trimmers.....\$ doz \$3.75
Tinners', List, Dec. 1881.....20¢25¢
Seymour's, List, Dec. 1881.....60¢10¢10¢60¢10¢10¢55¢
Heinrich's, List, Dec. 1881.....60¢10¢10¢60¢10¢10¢55¢
Heinrich's Tailor's Shears.....35¢
First quality C. S. Trimmers.....80¢80¢10¢
Second quality C. S. Trimmers.....80¢10¢80¢10¢10¢
Acme Cast Shears.....10¢10¢
Diamond Cast Shears.....10¢
Clipper.....10¢10¢
Victor Cast Shears.....75¢10¢75¢10¢55¢
Howe Bros. & Hulbert, Solid Forged Steel.....40¢
Chicago Drop Forge & F. Co., Solid Steel Forged.....60¢
Clausen Shear Co., Japaned.....70¢
Clausen Shear Co., Nickelplated, same list.....70¢

Shenaves—

Sliding Door—
M. W. Co., list July, 1888.....50¢10¢60¢55¢
R. & E., list Dec. 18, 1885.....55¢20¢
Corbin's list.....60¢10¢25¢
Patent Roller, Hatfield's.....75¢
Patent Roller, Hatfield's.....75¢
Russell's Anti-Friction, list Dec. 18, 1885.....60¢25¢
Moore's Anti-Friction.....50¢

Sliding Shutter—

R. & E., list Dec. 18, 1885.....60¢10¢25¢
Sargent's list.....60¢10¢25¢
Reading list.....60¢10¢10¢

Ship Tools—

L. & J. White.....20¢55¢
Albertson Mfg. Co.....25¢

Shoes, Horse, Mule, &c.—

Burden's, Perkins', Phoenix, at factory.....\$4.00

Staples—

Add \$1 ¢ keg to above prices.

Or, Wrought—

Ton lots.....\$ ¢ 04
1000 lb lots.....\$ ¢ 04¢
500 lb lots.....\$ ¢ 10¢

Shot—

(Eastern prices 2¢ off, cash, 5 days.)
Drop, ½ bag, 25 lb.....\$1.16
Drop, ½ bag, 5 lb......29
Buck and Chilled, ½ 25-lb bag.....1.41
Buck and Chilled, ½ 5-lb bag......34

Shovels and Spades—

Ame's Shovels, Spades, &c., list Nov. 1, 1885.....20¢
NOTE.—Jobbers frequently give 5¢ at 75¢ extra on above.
Griffith's Black Iron.....50¢10¢
Griffith's C. S.....60¢60¢10¢
Griffith's Solid C. S. R. R. Goods.....20¢
Old Columbia (Sanford Fork & Tool Co.).....20¢
St. Louis Shovel Co.....20¢20¢75¢
Hussey, Binns & Co.....15¢25¢
Hubbard & Co.....20¢20¢75¢
Lehigh Mfg. Co.....50¢10¢
Payne Fettebone & Son, list January, 1886.....30¢
Remington's (Lowman's) Pat. 30¢10¢40¢
Rowland's, Black Iron.....50¢10¢
Rowland's Steel.....60¢55¢60¢10¢

Shovels and Tongs—

Iron Head.....60¢10¢60¢10¢55¢
Brass Head.....60¢10¢10¢

Skins, Thimble—

Western list.....75¢55¢75¢10¢
Columbus Wrt. Steel, list Nov. 1, 1887.....20¢
Coldbrookdale Iron Co.....50¢10¢
Utica P. S. T. Skins.....60¢
Utica Turned and Fitted.....35¢

Sieves—

Buffalo Metallic, S. S. & Co.....50¢25¢10¢
Shaker (Barler's Pat.) Flour Sifters.....\$ doz \$2.00
Electric.....\$ gr \$18.00
Hunter's.....\$ gr \$21.00
Smith's Adjustable Sifters.....\$ doz \$2.00
Smith's Adjustable Milk Strainer.....\$ doz \$2.00
Smith's Adjustable T. & C. Strainer.....\$ doz \$1.25

Sieves, Wooden Rim—

Mesh 18, Nested, \$ doz.....70¢ 90¢
Mesh 20, Nested, \$ doz.....85¢ \$1.00
Mesh 24, Nested, \$ doz.....\$1.00 1.10

Slates—

School, by case.....40¢

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.).....65¢
Fitch's (Bristol).....50¢10¢
Hotchkiss.....10¢
Andrews.....50¢
Sargent's Patent Guarded.....70¢10¢10¢
German, new list.....40¢10¢
Covert, New Patent.....50¢55¢
Covert, New B. R. E.....60¢10¢25¢
Covert Spring.....60¢10¢25¢

Soldering Irons—

Covert's Adjustable, list Jan. 1, 1886.....35¢25¢

Spoke Shaves—

Iron.....45¢
Wood.....30¢
Bailey's (Stanley R. & L. Co.).....40¢10¢
Stearns.....20¢10¢30¢

Spoke Trimmers—

Bonney's.....\$ doz \$10.00, 50¢
Stearns.....20¢10¢
Ives, No. 1, \$15.00; No. 2, \$12.00 \$ doz.....55¢10¢
Douglas.....\$ doz \$9.00, 20¢

Spoons and Forks—

Tinned Iron—
Basting, Cen. Stamp. Co.'s list.....70¢10¢
Solid Table and Tea, Cen. Stamp. Co.'s list.....70¢10¢
Buffalo S. S. & Co.....35¢25¢
Silver Plated—(4 mos. or 5¢ cash 30 days.)

Meriden Brit. Co., Rogers.....50¢
C. Rogers & Bros., Rogers.....50¢
Rogers & Bro.....50¢
Rosed & Harton.....50¢
Wm. Rogers Mfg. Co.....50¢10¢40¢
Simpson, Hall, Miller & Co.....50¢10¢
Holmes & Edwards Silver Co.....50¢10¢60¢
L. Boardman & Son.....50¢10¢
Miscellaneous
Holmes & Edwards Silver Co.:
No. 47 Mexican Silver.....50¢10¢
No. 30 Silver Metal.....50¢10¢
No. 24 German Silver.....50¢10¢
No. 50 Nickel Silver.....50¢
No. 49 Nickel Silver.....50¢10¢
German Silver.....50¢30¢55¢
German Silver, Hall & Elton.....50¢55¢ cash
Nickel Silver.....50¢55¢50¢10¢55¢ cash
Britannia.....60¢
Boardman's Nickel Silver.....50¢
Boardman's Britannia Spoons, case lots.....60¢

Springs—

Elliptic, Concord, Platform and Half-
Scroll.....60¢60¢55¢
Cliff's Bolster Springs.....25¢

Squares—

Steel and Iron.....75¢10¢80¢
Nickel-Plated.....60¢10¢60¢10¢
Try Square and T Bevels.....10¢
Diston's Try Square and T Bevels.....45¢10¢
Winterbottom's Try and Miter.....30¢10¢
Starrett's Micrometer Caliper Squares.....25¢

Standard Fibre Ware—

Per Dozen.
Plain, Dec'r'd
Wash-Basins, 10½ in.....\$2.00 \$2.25
Wash-Basins, 12 in.....2.25 2.75
Keeblers, 11¼ in.....4.00
Cuspidors.....8.00
Spittoons, "Daisy," 8 in.....4.00 4.50
Peck Measure.....4.00
Half-peck Measure.....3.50
See also Pails.

Staples—

Fence Staples, Galvanized. } Same price
Fence Staples, Plain.....} as Br'd Wire.
Fence Staples, Plain.....} See Trd. Rep.

Steel Yards—

40¢10¢50¢

Stocks and Dies—

Blacksmith's
Waterford Goods.....30¢55¢30¢10¢
Butterfield's Goods.....30¢55¢30¢10¢
Lighting Screw Plate.....25¢30¢
Reece's New Screw Plates.....35¢35¢40¢

Stone—

Hindustan No. 1, 3¢; Axe, 3¢; Slips
No. 1, 4¢
Sand Stone.....\$ ¢ 24¢
Washita Stone, Extra.....\$ ¢ 19¢20¢
Washita Stone, No. 1.....\$ ¢ 14¢15¢
Washita Stone, No. 2.....\$ ¢ 10¢11¢
Washita Slips, No. 1, Extra.....\$ ¢ 36¢38¢
Washita Slips, No. 1.....\$ ¢ 24¢25¢
Arkansas Stone, No. 1, 4 to 6 in.....\$ ¢ 15¢50¢
Arkansas Stone, No. 1, 6 to 9 in.....\$ ¢ 13¢35¢
Turkey Oil Stone, 4 to 8 in.....\$ ¢ 40¢
Turkey Slips.....\$ ¢ \$1.00, 1.50
Lake Superior, Chase.....\$ ¢ 16¢
Lake Superior Slips, Chase.....\$ ¢ 31¢32¢
Seneca Stone, Red Paper Brand.....\$ ¢ 20¢25¢
Seneca Stone, High Rounds.....\$ ¢ 20¢25¢
Seneca Stone, Small Whets.....\$ ¢ 20¢24¢

Stove Polish—

Joseph Dixon's.....\$ gr \$6.00, 9.00¢
Gem.....\$ gr \$4.50, 10¢
Gold Medal.....\$ gr \$6.00, 25¢
Mirror.....\$ pr \$6.00, —¢
Lustro.....\$ gr \$4.75
Ruby.....\$ gr \$5.75
Rising Sun.....\$ gr \$5.50
Dixon's Plumbago.....\$ ¢ 50¢
Boynton's Noon Day.....\$ gr 15.00
Parlor Stove Enamel.....\$ gr 3 cans
Yates' Liquid.....2 3 5 10 gal.....8¢
Yates Standard Paste Polish, 10-lb cans.....\$ ¢ 15¢

Tacks, Brads, &c.—

List, Jan. 2, 1888.—[Note. Some manufacturers are selling Tacks at slightly higher prices than those named.]
American Iron Carpet.....80¢80¢55¢
Steel Carpet.....80¢80¢55¢
Swedes Iron Carpet.....80¢80¢55¢
American Iron Cut.....75¢75¢10¢
Swedes Iron, Upholsterers.....75¢75¢10¢
Tinned Swedes Iron.....75¢10¢75¢10¢55¢
Tinned Swedes Iron, Upholsterers.....75¢10¢75¢10¢55¢
Gimp and Lace.....75¢10¢75¢10¢55¢
Tinned Gimp and Lace.....75¢10¢75¢10¢55¢
Swedes Iron Trimmers.....75¢10¢75¢10¢55¢
Swedes Iron Miners.....75¢10¢75¢10¢55¢
Swedes Iron Bill Posters' or Railroad.....75¢10¢75¢10¢55¢

Swedes Steel (Swedes Iron price list).

80¢80¢55¢
Copper Tacks.....50¢10¢
Copper Finishing, Trunk and Clout Nails.....50¢10¢
Finishing Nails.....70¢10¢70¢10¢10¢
Trunk and Clout Nails.....70¢10¢70¢10¢10¢
Tinned Trunk and Clout Nails.....70¢10¢
Basket Nails.....70¢10¢70¢10¢10¢
Common and Patent Brads, 70¢10¢70¢
Hungarian Nails.....70¢10¢70¢10¢10¢
Chair Nails.....70¢10¢70¢10¢10¢
Zinc Glaziers' Points.....50¢50¢55¢
Cling Box Nails.....50¢10¢50¢10¢55¢
Picture Frame Points.....50¢10¢50¢10¢55¢
Looking Glass Tacks.....50¢10¢50¢10¢55¢
Leathered Carpet.....50¢10¢50¢10¢55¢
Brush Tacks.....50¢10¢50¢10¢55¢
Shoe Finders, List Jan. 2, 1888, 10¢10¢
Lining and Saddle Nails, List Jan. 1, 1888:

Silvered.....30¢10¢10¢
Japanned.....20¢10¢10¢
Double-Pointed Tacks.....85¢
Wire Carpet Nails.....50¢10¢
Wire Brads & Nails, see Nails Wire.
Steel Wire Brads, R. & E. Mfg. Co.'s list.....50¢10¢

Tap Borers—

Common and Kind.....20¢10¢
Ive's Tap Borers.....35¢35¢
Enterprise Mfg. Co.....20¢10¢30¢
Clark's.....35¢35¢35¢

Tapes, Measuring—

American.....25¢10¢
Spring.....40¢
Chesterman's, Regular list.....25¢30¢

Thermometers—

Tin Case.....80¢80¢10¢

Thimble Skeins—See Skeins.

Ties, Bale—Steel

Standard Wire, list.....50¢10¢55¢

Tinners' Shears, &c.—

Shears and Snips (P. S. & W.).....20¢25¢
Punches, see Punches.
Snips, J. Mallinson & Co.....35¢35¢

Tinware—

Stamped, Japanned and Plated, list Jan. 20 1887.....75¢75¢55¢

Tire Benders, Upsetters, &c.—

Stoddard's Lightning Tire Upsetters.....15¢
Detroit Perfected Tire Bender.....15¢

Tobacco Cutters—

Champion.....20¢10¢30¢
Wood Bottom.....\$ doz \$5.00, \$5.25
All Iron.....\$ doz \$4.25
Nashua Lock Co.'s \$ doz, \$18.00 50¢55¢
Wilson's.....55¢
Sargent's.....\$ doz, \$24, 55¢10¢
Acme.....\$ doz, \$20.00, 40¢

Transom Lifters—

Wollensak's:
Class 3 and 4, Bronzed Iron.....50¢
Class 3 and 4, Bronze Metal.....25¢
Class 3 and 4, Brass.....35¢
Skylight Lifters.....35¢
Crown, Eagle and Shield.....50¢
Reiter's, list Jan. 1, 1887.....50¢10¢2¢
Bronzed Iron Rods.....50¢10¢2¢
Brass, Real Bronze or Nickel Plate.....30¢
Excelsior.....50¢10¢25¢
Shaw's.....50¢10¢
Payson's Universal.....40¢40¢10¢

Traps—

Game—
Newhouse.....35¢40¢55¢
Onedia Pattern.....70¢70¢55¢
Game, Blake's Patent.....40¢10¢55¢
Mouse and Rat—
Mouse Wood Choker, \$ doz holes, 11¢12¢
Mouse, Round Wire.....\$ doz \$1.50, 10¢
Mouse, Cage Wire.....\$ doz \$2.50, 10¢
Mouse, Catch-em-alive.....\$ dz \$2.50, 15¢
Mouse, Bonanza.....\$ gr \$10.00
Mouse Delusion.....\$ gr \$15.00
Rat, Decoy.....\$ gr \$10.00, 10¢
Ideal.....\$ gr \$10.00
Cyclone.....\$ gr \$5.25
Hotchkiss Metallic Mouse, 5-hole traps.....\$ doz 90¢
In full cases.....\$ doz 75¢

Trowels—

Lothrop's Brick and Plastering.....25¢25¢55¢
Reid's Brick and Plastering.....15¢
Dixon's Br'k and Plastering.....25¢25¢10¢
Peace's Plastering.....25¢
Clement & Maynard's.....20¢
Rose's Brick.....15¢20¢
Brade's Brick.....25¢
Worral's Brick and Plastering.....70¢
Garden.....70¢

Triers—

Butter and cheese.....25¢

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list, '82.....40¢

Tubes, Boiler—

See Pipe.

Twine—

Flax Twine— BC. B.
No. 9, ¼ and ½ lb Balls.....22¢ 30¢
No. 12, ¼ and ½ lb Balls.....21¢ 29¢
No. 18, ¼ and ½ lb Balls.....18¢ 28¢
No. 24, ¼ and ½ lb Balls.....18¢ 28¢
No. 30, ¼ and ½ lb Balls.....10¢ 27¢
No. 36, ¼ and ½ lb Balls.....10¢ 27¢
Chalk Line, Cotton, ¼ and ½ lb Balls.....25¢
Mason Line, Linen, ¼ lb Balls.....55¢
2-Ply Hemp, ¼ and ½ lb Balls (Spring Twine).....11¢
3-Ply Hemp, 1 lb Balls.....12¢12¢
3-Ply Hemp, 1½ lb Balls.....11¢11¢
Cotton Wrapping, 5 Balls to lb.....15¢16¢
2, 3, 4 and 5-Ply Jute, ½ lb Balls.....10¢
Wool.....6¢6¢
Paper.....13¢14¢
Cotton Mops, 6, 9, 12 and 15 lb to doz.....18¢

Vices—

Solid Box.....60¢60¢55¢
Fisher & Norris Double Screw.....15¢10¢
Stephens.....25¢30¢
Parker's.....20¢25¢
Wilson's.....40¢
Howard's.....40¢
Bonney's.....40¢10¢
Millers Falls.....40¢40¢10¢
Trenton.....40¢55¢40¢10¢
Merrill's.....60¢10¢10¢
Sargent's.....60¢10¢10¢
Backus and Union.....40¢
Double Screw Leg.....15¢10¢
Prentiss.....20¢25¢
Simpson's Adjustable.....40¢
Moore's.....20¢

Saw Files—

Bonney's, Nos. 2 & 3, \$15.00.....40¢10¢
Stearns.....35¢40¢10¢35¢40¢10¢
Stearns' Silent Saw Vices.....35¢40¢35¢
Sargent's.....60¢10¢
Hopkins.....\$ doz \$17.50, 10¢
Reading.....40¢10¢
Wentworth.....\$ gr \$42.00
Combination Hand Vices.....\$ gr \$42.00
Covell Hand Vices.....20¢
Bauer's Pipe Vices.....10¢

Wagon Boxes—

Per lb.....25¢

Wagon Jacks—

Daisy.....25¢

Washer Cutters—

Smith's Pat.....\$ doz \$12.00, 20¢10¢10¢
Spring.....\$ doz \$11, 35¢
Penny's \$ doz Fol. \$14, Jap'd, \$10.00, 55¢
Appleton's.....\$ doz \$16.00, 60¢10¢
Bonney's.....30¢10¢

Washers—

Size.....½ 5-16 ¾ ½ ¾ 1
Washers.....7 5¼ 4¾ 3¾ 3¼ 3¼ 3¼
In lots less than 200 lb, \$ ¢ 4, add ½ ¢ 5-lb boxes 1¢ to list.

Wedges—

Iron.....\$ ¢ 3¢
Steel.....\$ ¢ 4 ¢

Well Buckets, Galvanized—

Hill's.....\$ doz, 12 qt, \$4.25; 14 qt, \$5.25
Iron Clad.....\$ doz, 14 qt, \$4.25, \$4.50
Whiting's Flat Iron Band.....\$4.25, \$4.50
Whiting's Wired Top.....\$ doz \$4.00, \$4.25

Well Wheels—

8 in., \$2.25; 10 in., \$2.70; 12 in., \$3.25

Wire—

Market—
Br. & Ann., Nos. 0 to 18.....70¢10¢75¢
Cop'd, Nos. 0 to 18.....70¢70¢55¢
Galv., Nos. 0 to 18.....25¢55¢
Tin'd, Tinned list Nos. 0 to 18.....67¢
Stone.....70¢
Br. and Ann'd, Nos. 16 to 18, 72½¢
Bright and Ann'd, Nos. 19 to 26, 75¢
Br. and Ann'd, Nos. 27 to 36, 75¢10¢55¢
Tinned.....70¢70¢10¢
Tinned Broom Wire.....70¢55¢70¢10¢
Galvanized Fence.....65¢
Annealed Fence, Nos. 8 and 9.....75¢
Annealed Grape, Nos. 10 to 14.....75¢
Brass, list Jan. 18, 1884.....15¢20¢
Copper, list Jan. 18, 1884.....30¢35¢
Barb Fence.....See Trade Report
Wire on Spools.....65¢
Malin's Steel and Tin'd Wire on Spools.....40¢
Malin's Brass and Cop. Wire on Spools 30¢
Stubs' Steel Wire.....\$ ¢ 00 to 2, 30¢
Steel Music Wire, Nos. 12 to 30, 55¢ ¢
Picture Wire.....New list, 50¢
Barb Wire Safety Guards.....\$ 1000, \$9.00, 25¢
Wire Clothes Lines, see Lines.

Wire Cloth, Netting, &c.—

Painted Screen Cloth, good quality,
\$ 100 sq. ft., \$1.80 at \$1.90
Galvanized Wire Netting.....75¢75¢55¢

Wire Goods—

See Bright Wire Goods.

Wire Rope—

List May 1, 1886.
Iron.....30¢
Cast Steel.....40¢

Wrenches—

American Adjustable.....40¢
Baxter's Adjustable "S".....40¢10¢50¢
Baxter's Diagonal.....40¢10¢50¢
Coes' Genuine.....55¢35¢
Coes' "Mechanics".....55¢10¢35¢
Girard Standard.....70¢10¢
Machinists', Sterling Wrench Co., 70¢10¢
Lamson & Sessions' Engineers'.....60¢10¢
Lamson & Sessions' Standard.....70¢10¢
Goes' Pattern, Wrought.....
Girard Agricultural.....
Lamson & Sessions' Agric'l.....80¢
Sterling Wrought.....
Bemis & Call's
Pat. Combination.....35¢
Merrick's Pattern.....35¢
Briggs' Pattern.....25¢
Cylinder or Gas Pipe.....40¢55¢
No. 3 Pipe.....40¢10¢
Aiken's Pocket (Bright).....\$6.00, 50¢10¢
The Favorite Pocket.....\$ doz \$4.00, 40¢
Webster's Pat. Combination.....25¢
Boardman's.....20¢10¢
Always Ready.....25¢55¢
Alligator.....50¢
Donohue's Engineer.....20¢10¢
Acme, Bright.....60¢35¢
Acme, Nickelplated.....50¢35¢<

JUNE 26, 1889.

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THE IRON AGE

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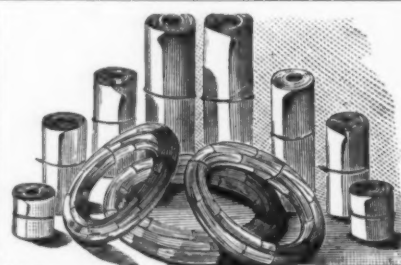
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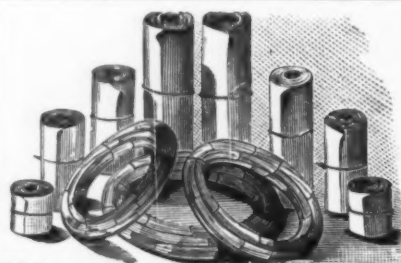
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THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

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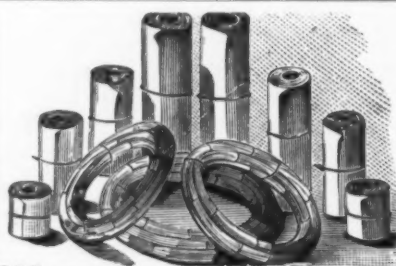
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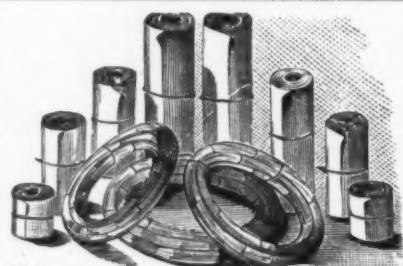
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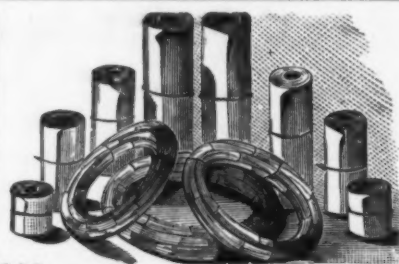
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613 North Main St., St. Louis, Mo.

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A Review of the Hardware, Iron and Metal Trades.

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Copper Tubing,

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Seamless Brass Ferrules

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Copper Bottoms

Bolts, Circles, &c., &c.

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Chain Kerosene Burners
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22 Murray St.

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(Established 1862.)

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GERMAN SILVER.—Sheet German Silver, German Silver
Wire, German Silver Tubing.

BUTT HINGES.—Narrow, Middle, Broad, Desk, Ship,
Stop, Spring and Piano-Forte.

BUTTONS.—Military, Naval, Livory, Society, Rail-
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Copper Bottoms, Brass and Copper
Tubes, Wire, Rods, etc.,

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The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades and a standard authority on all matters relating to those branches of industry.

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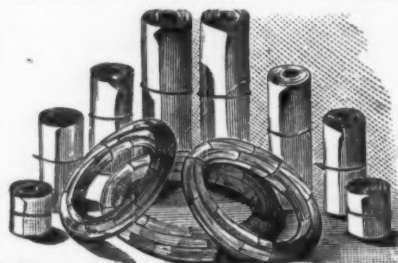
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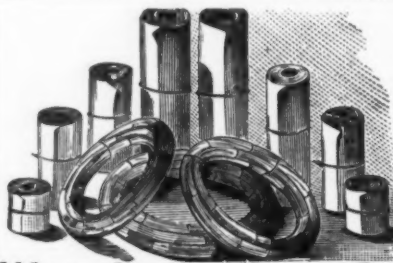
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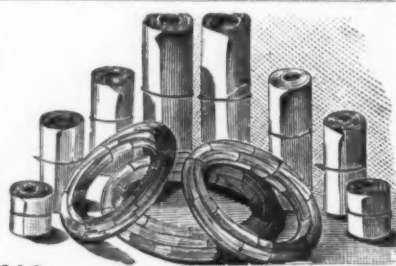
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THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

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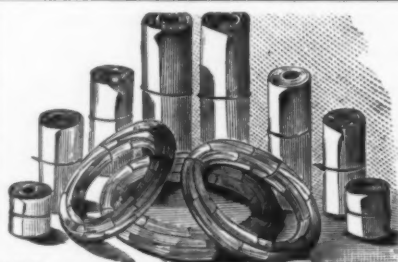
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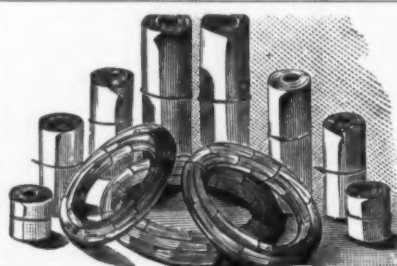
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THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

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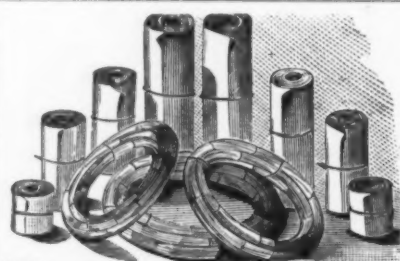
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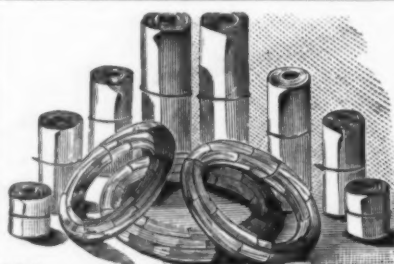
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THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

Published every Thursday Morning by David Williams, Nos. 66 & 68 Duane St., New York.

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New York, Thursday, April 18, 1889.

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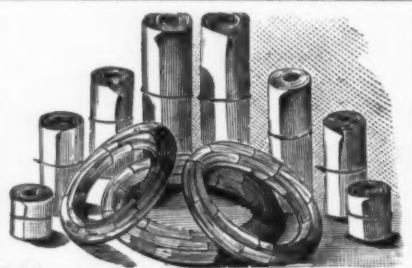
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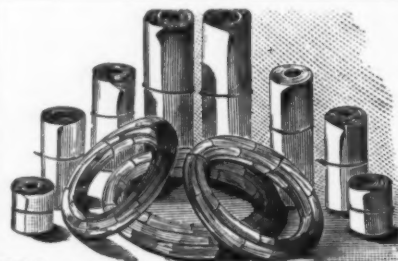
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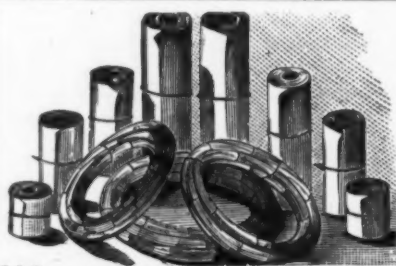
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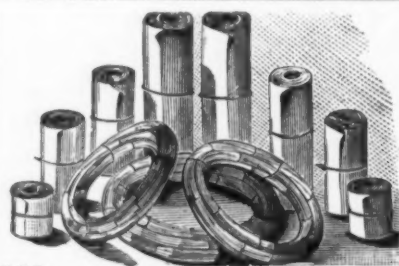
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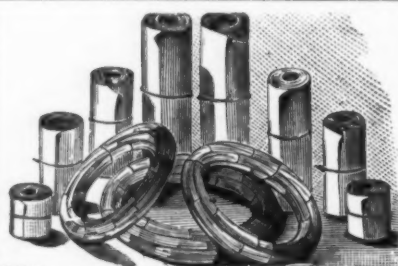
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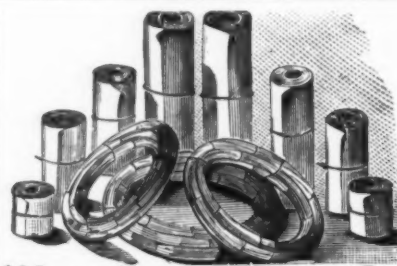
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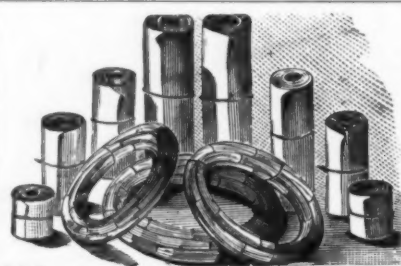
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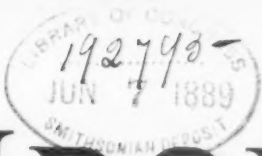
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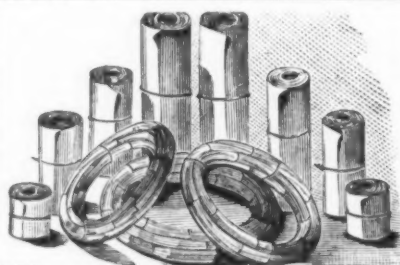
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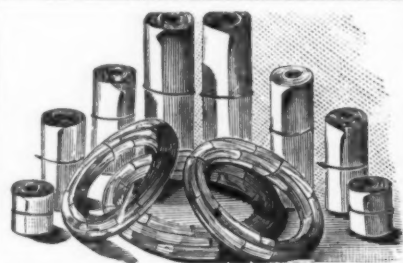
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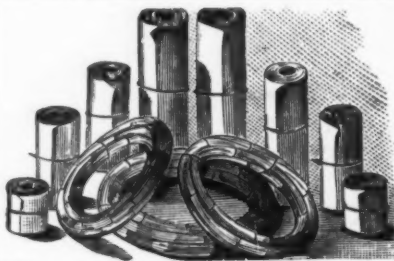
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